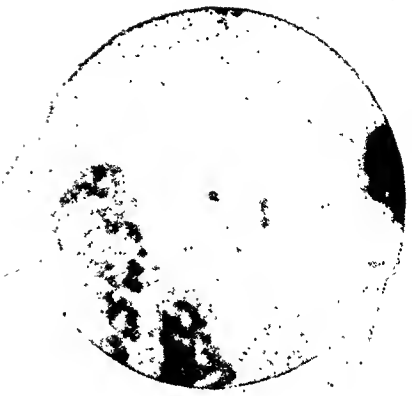
PNEUMONIA *in* 1944-1945



PNEUMONIA will intrude upon the winter scene as inevitably as the wind, the snow, and the ice. This year as never before, however, the means are at hand for control of this disease by—

Prevention—through public health education programs.

Early Diagnosis—through complete and prompt physical examinations and typing of all suspicious sputa by means of the Neufeld "capsular swelling" reaction.

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Sulfadiazine—universally regarded as the sulfonamide of choice in the treatment of pneumonia.

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DISEASES *of the* CHEST

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Cancer of the Esophagus: Original Technique for Total Esophagectomy

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A review of the literature on the subject of total esophagectomy for cancer shows that experience in this field is relatively small, and that only in the last few years have results begun to offer encouragement. Although early roentgenologic and esophagoscopic diagnoses are now made more frequently, the seriousness and high mortality of esophagectomy still deter surgeons from employing the operation more frequently.

After making a series of studies on cadavers and after having done total esophagectomy on five patients, I have found that the operative technique may be simplified greatly, thus reducing complications and mortality. The purpose of this paper is to describe the new technique in order that it may be subjected to the test of use in other hands.

Total esophagectomy requires consideration of several aspects of anesthesia and technique that should be taken up separately.

Anesthesia—Contrary to the choice of many surgeons, I prefer peridural rather than general anesthesia. I have done not only thoracoplasties and other operations on the thoracic cage, but also a large number of intrathoracic operations—lobectomies and pneumonectomies, as well as the five total esophagectomies previously mentioned—and am able to say that peridural anesthesia is truly the anesthesia of choice and is irreplaceable in this field. I use the novocain-pantocain formula and inject 40 to 50 cc. between the 1st and 3rd dorsal vertebrae. With it one obtains total insensibilization of the neck, thorax, superior extremities and part of the abdomen, without loss of motility. The anesthesia is of sufficient duration (1½ to 2 hours) to permit all major intracavitary procedures; it does not interfere with the patient's respiration; and it produces only a slight reduction in blood pressure, which is easily controlled with ephedrin, veritol, etc. Hyperpressure inhalation anesthesia, on

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the other hand, is unsuitable because the distended lung interferes with the operative maneuvers. The advantages of peridural over general anesthesia are such that I have completely dispensed with the latter.

Pneumothorax—Arce's preliminary pneumothorax[1] is essential. Operative facility is greatly increased by having the lung collapsed and quiet against the hilus.

Approach to the Esophagus—A study of the relationships of the thoracic esophagus shows, in my opinion, that the approach unquestionably should be from the right side. If approached from the left side, it is extremely difficult to section the esophagus and to obliterate its stump with a purse-string suture in the narrow space between lung and heart in front, the inferior vena cava to the right and in front, and the descending aorta behind. Further, having reached the level of the arch of the aorta, one must work beneath and behind it in order that the esophagus may be removed through the superior mediastinum, with the added hazard of damage to the recurrent laryngeal nerves and the thoracic duct. Figure 1 reproduces a drawing of an anatomical preparation made at our department, showing the relationships of the thoracic viscera and the

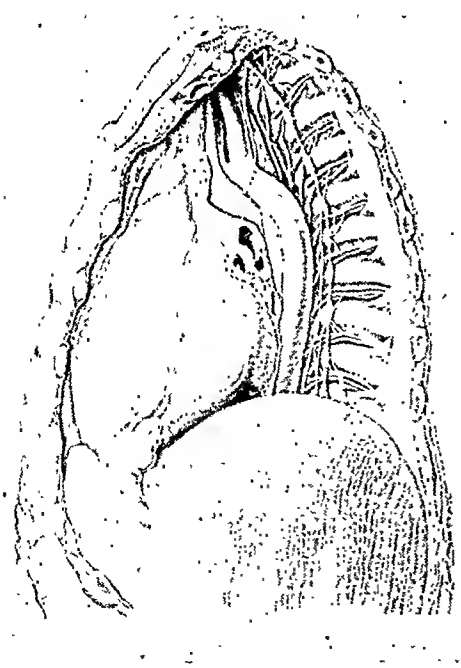

Fig. 1

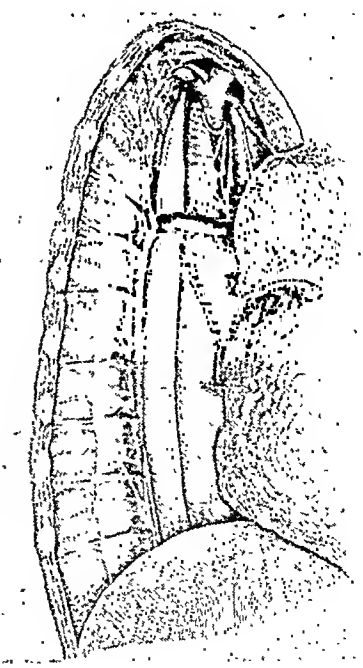

Fig. 2

Fig. 1—Topography of the thoracic viscera. Left hemithorax. (Preparation and drawing from the Department of Surgical Technique, Faculty of Medicine of the University of Sao Paulo.) *Fig. 2*—Topography of the thoracic viscera. Right hemithorax. One sees the thoracic portion of the esophagus in practically its entire length, crossed only by the vena azygos major and the right bronchial artery.

difficulties to be overcome when the approach is from the left side.

Approach through the right hemithorax is incomparably more simple and less serious, because the esophagus, in its thoracic portion, is situated more to the right than to the left. Beginning at the left in the neck, it penetrates the thorax in an oblique direction to the right, descends to the right of the median line, and enters the hiatus of the diaphragm at the median line. Figure 2 reproduces a drawing which clearly shows the relationships of the thoracic esophagus and its inclination to the right. Once the lung is drawn aside and the mediastinal pleura incised, the esophagus may be seen in practically its whole extent, since it is not hidden by the aorta or the heart. The pneumogastric and recurrent nerves are easily seen. It is crossed only by the vena azygos major, which empties into the superior vena cava, and by the bronchial artery.

On this side it is usually a simple matter to free the esophagus from its bed and to slip it upward behind the vena azygos, at the same time detaching any adhesions between trachea or bronchi and the esophagus. If technical conditions warrant ligation and severance of the azygos vein in order to facilitate isolation of the esophagus, as in my last case, this can be accomplished easily. In this case the malignant zone was tightly adherent to the trachea, from which, however, it was easily separated. I am sure that had the approach been made from the left side it would have been

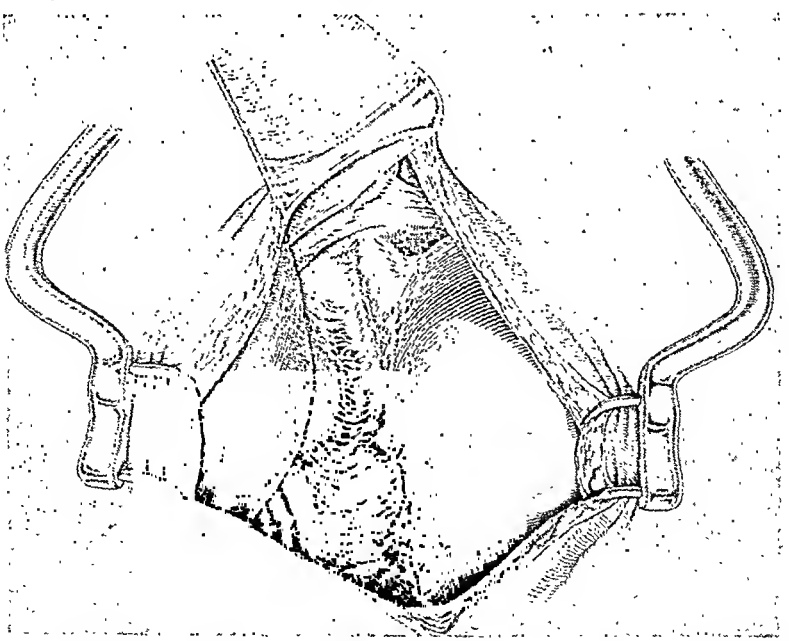

Fig. 3—Median incision, left lobe of the liver retracted. View of the cardia and abdominal esophagus.

impossible to separate the adherent organs and to complete the extirpation.

Gastrostomy—Any of the techniques previously used for gastrostomy have two inherent disadvantages: (1) A simple procedure gives an incontinent ostium; and the more difficult procedures, like Janeway's,[2] DePage's,[3] or Spivack's,[4,5] which utilize a portion of the stomach wall to construct a mucosa-lined tube—in my opinion only the last gives a really continent ostium—have a significant mortality coefficient. (2) Section of the esophagus is done in the thorax, opening the way for infection of the pleura and, according to many surgeons, requiring a drain in the cavity to forestall the development of empyema. Besides, placing a purse-string suture and securing tight closure of the remaining stump of esophagus in the depths of the thorax calls for considerable technical ability.

After working out the technique on cadavers I was able to verify in patients the conclusion that it is much easier, and from every point of view preferable, to section the esophagus below the diaphragm in the first operative stage, closing the superior extremity and implanting the end of the abdominal portion in the skin.

This method has three important advantages: (1) Section and closure of the esophagus is incomparably easier through the abdomen than through the thorax. (2) A tube for implantation into the skin is ready-made, obviating a gastrostomy entirely. By making a

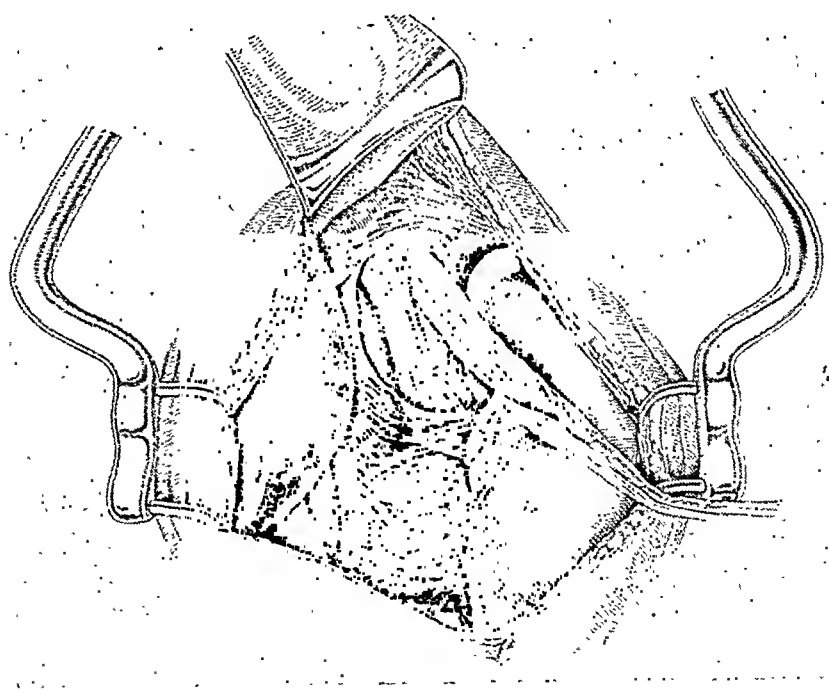

Fig. 4—View of the esophageal hiagus of the diaphragm. Esophagus held in a loop of gauze.

seromuscular fold at the base of this tube, as in Spivack's gastrostomy,[4] one obtains an ostium which is absolutely continent, as I had the opportunity of verifying in animals and in the last case I operated. The patient was told to contract the abdominal muscles, or to cough, immediately after 500 cc. of liquid had been placed in the stomach; and none of it escaped through the ostium. (3) The chief advantage, and the real purpose of the new technique, is that it permits an absolutely aseptic thoracic stage, since the digestive tube is not opened in the thorax. Inasmuch as the thoracic stage is shortened, intrathoracic manipulation is reduced, and the chief source of contamination—the only source, when one maintains a strictly aseptic technique—is eliminated, operative mortality and postoperative complications should be greatly reduced.

OPERATIVE TECHNIQUE

Abdominal Stage—A median xiphoid-umbilical incision is used. Having put the Gosset retractor in place, one looks for the cardia. It is easily seen when the left lobe of the liver is retracted (Fig. 3). After incising the peritoneum which covers the abdominal esophagus, one sees clearly the pillars of the diaphragmatic hiatus. A strip of gauze is then looped around the esophagus, by means of which traction is made and the esophagus is drawn down through the hiatus for a distance of 6 to 8 centimeters (Fig. 4). It is then sectioned between two ligatures and an "enfuissement" is made in the superior extremity. The hiatus is closed over the stump with 2 or 3 stitches (Fig. 5).

The upper portion of the stomach is mobilized and its coronary ligament sectioned, which frees the abdominal esophagus and per-

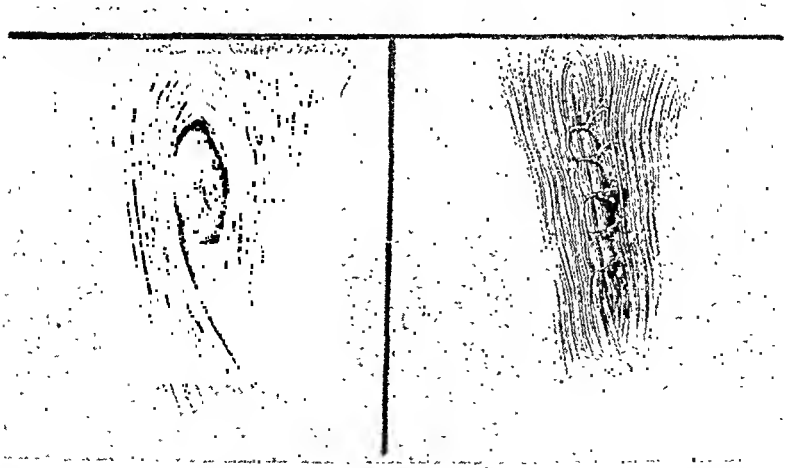

Fig. 5—Closure of the esophagus with a purse-string suture. Approximation of the diaphragmatic pillars with stitches.

mits it to be brought up to the anterior abdominal wall. A seromuscular pleat is made in the esophago-gastric passage, so as to create a valve facing the opening (Fig. 6).

A vertical transrectal incision 3 to 4 centimeters long is made close to the left costal border. The fundus and anterior wall of the stomach are sutured to the abdominal wall with separate stitches to provide support. The esophageal tube is passed through the transrectal opening and the mucosa is carefully sutured to the skin with interrupted stitches to secure perfect approximation (Fig. 7).

The patient is given eight to ten days to recover from this operation, being fed and hydrated at the same time. During a second period of ten days Arce's preliminary pneumothorax is established in preparation for opening the thorax.

Thoracic Stage—Incision is made over the 6th rib from the external border of the paravertebral musculature to a little above the chondrocostal junction in front. The 6th rib is removed by subperiosteal resection, the pleura is opened through the rib bed, and the wound spread with a large Sauerbruch retractor.

The collapsed lung is retracted forward and the mediastinal pleura incised vertically, posterior to the lung root. Thus the entire thoracic esophagus is exposed, crossed only by the azygos vein and the bronchial artery. Since the inferior extremity is already sectioned and closed, it is necessary only to free it from its bed of loose connective tissue. On reaching the level of the azygos vein, the

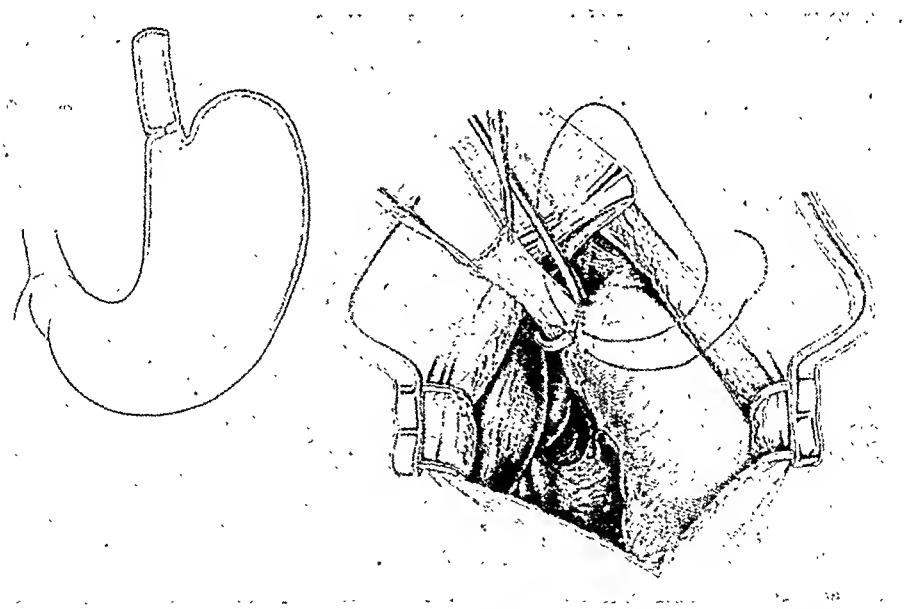

Fig. 6—Technique of cardiostomy. Abdominal esophagus sectioned. Stomach mobilized by section of the coronary ligament. Fashioning the circular seromuscular pleat at the esophago-gastric junction. Sketch to show the valve mechanism.

technical conditions will determine whether it is preferable to ligate and section this vessel or whether the esophagus can be mobilized sufficiently to remove it from beneath the intact vessel. Adhesions to the trachea and the bronchus can be separated under direct visual control. Detachment of the esophagus from its bed should reach the level of the neck on the first rib.

The thorax is closed without drainage.

Cervical Stage—At this level the esophagus is more easily reached from the left side, and such an approach has no disadvantages in relation to the thoracic wound on the right.

The patient is placed in dorsal decubitus. An incision 8 to 10 centimeters long is made along the anterior border of the sterno-cleido-mastoid muscle, and the underlying muscles are separated and retracted until the esophagus is reached. In some cases its exposure is facilitated by ligation of the inferior thyroid vessels. When the esophagus is adequately exposed it is drawn out through the wound and the musculo-aponeurotic layers approximated with separate stitches. Just before closure is completed the inhalation apparatus should be applied and the lung re-expanded with positive pressure, to insure the benefit of maximum pulmonary ventilation. The esophagus is fixed to the borders of the cutaneous orifice with non-penetrating interrupted sutures. Before sectioning the esopha-

Fig. 7—Drawing of the cardiostomy.

gus I prefer to close the proximal end with a silk tie to prevent saliva flowing over the operative wound, macerating it and making it liable to infection. Such closure has the advantage of keeping the wound dry for 4 to 5 days, time enough for healing to have taken place.

Figure 8 is the photograph of a patient one and one-half months after esophagectomy by the technique just described.

This new technique, in my opinion, completely alters the prognosis of total extirpation of the esophagus, permitting a more optimistic attitude, because of the reduction in complications and mortality rate of this serious surgical procedure.

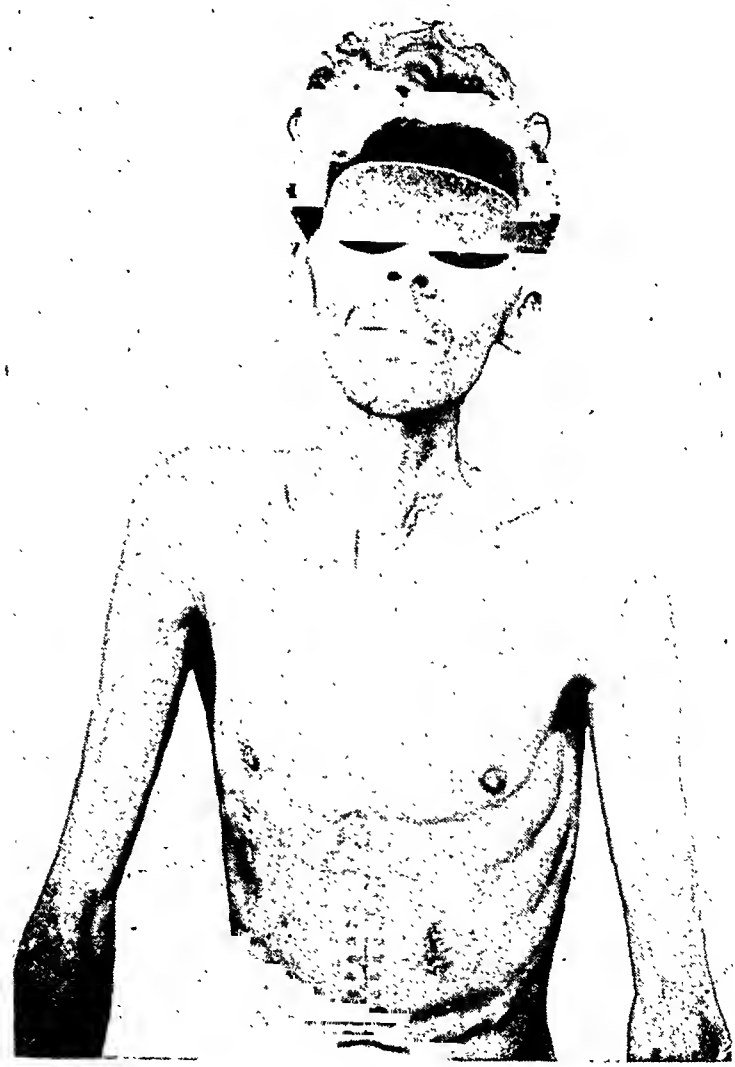

Fig. 8—Patient one and one-half months after total esophagectomy by the author's technique. Notice the orifices of the esophagectomy and of the cardiostomy.

SUMMARY

A review of the literature on the subject of total esophagectomy for cancer shows that experience in this field is relatively small, and that only in the last few years have results begun to offer encouragement.

The author describes and illustrates in detail a new technique for total esophagectomy. Peridural is preferred to general anesthesia. The operation consists of an abdominal, a thoracic, and a cervical stage. A preliminary artificial pneumothorax is established in the interval between the abdominal and the thoracic stages. This is considered to be an essential preparation before opening the thorax.

In the opinion of the author, this new technique completely alters the prognosis of total extirpation of the esophagus and permits a more optimistic attitude because of the reduction in complications and mortality rate.

RESUMEN

El repaso de la literatura sobre la materia de la esofagoectomia total para el cáncer revela que la experiencia en este campo ha sido relativamente escasa, y que sólo ha sido en los últimos pocos años cuando los resultados han comenzado a ser alentadores.

El autor describe e ilustra en detalle una nueva técnica para la esofagoectomía total. Se prefiere la anestesia peridural a la anestesia general. La operación consiste de tres etapas: abdominal, torácica y cervical. Se lleva a cabo un neumotórax artificial preliminar en el intervalo entre le etapa abdominal y la torácica. Esta es una preparación esencial antes de abrir el tórax.

Opina el autor que esta nueva técnica altera por completo el pronóstico de la extirpación total del esófago y nos permite asumir una actitud más optimista debido a la disminución de las complicaciones y la mortalidad.

SUMARIO

O Autor, depois de estudos em cadaver e de cinco operacoes no vivo, propoe uma nova técnica, com os seguintes pontos fundamentais:

1) Anestesia peridural.

2) Pneumotorax prévio de Arce.

3) Via de acesso pelo lado direito, mostrando em córtes e desenhos originais que o trajeto do esofago e muito mais a direita do que á esquerda em seu segmento torácico, e por aí muito mais facilmente abordado.

Incisao ao longo da 6ª ou 7ª costela, conforme o tipo morfológico do doente. Acesso ao esofago cervical pela esquerda, o que facilita a extirpacao a esse nivel.

Os pontos fundamentais da técnica sao:

1°tempo—Incisao xifo-umbilical. Seccao do esofago abdominal com fechamento da extremidade superior. A extremidade inferior é tratada de modo a se obter uma válvula músculo-mucosa conforme indica a fig. 6.

Cardiostomia cutanea paramediana esquerda, como mostra a fig. 7.

2° tempo—Ao cabo de 15 a 30 dias, esofagectomia pelo hemitorax direito.

Vantagens da técnica: Muito maior facilidade da seccao e sutura do esofago por via torácica. Cardiostomia continente, aproveitando-se a incisao abdominal para os dois tempos, tanto esofagiano como gástrico.

A via do hemitorax direito é muito mais fácil pelas relacoes anatomicas do que pela esquerda. A' direita, como se ve na fig. 2, o esofago está exposto em quasi todo o seu trajeto torácico, recoberto quasi que só pela pleura. Fundamental vantagem ó a esofagectomia asséptica atravez do tórax, o que representa, a nosso ver, a maior vantagem do método.

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Lower Lung Field Tuberculosis*

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It is a well-known fact that the roentgenological manifestations of the reinfection or adult type of pulmonary tuberculosis are usually first noted in the apical and infraclavicular regions of the lung. Persistent rales in the upper chest, along with hemoptysis, x-ray findings, pleurisy and positive sputum, are considered as the criteria for a clinical diagnosis of pulmonary tuberculosis. Tuberculous involvement of the lower lung fields was previously considered so infrequent that such a diagnosis was rarely ever made. As a matter of fact, as late as 1921, Landis[1] stated, "My opinion concerning basal tuberculosis is still unchanged; children may have it at the base, but adults practically never." Fishberg[2] in 1922 stated, "Basal lesions in tuberculous patients are extremely rare; when they do occur they are terminal phenomena, when the diagnosis is beyond question. A lesion at the base, while the apex is free, should be considered non-tuberculous unless the sputum is positive as regards tubercle bacilli."

On the other hand, Kidd[3] (1886) stated that "The apex of the lower lobe is very prone to (tuberculous) disease and may be attacked before the apex of the upper lobe." Fowler[4] (1888) stated: "The upper and posterior part of the lower lobe is a spot only second in point of vulnerability to the apex itself." Furthermore, Fishberg[5] in the next edition of his book (4th ed.) in 1932 changed the above mentioned statement to read: "Basal lesions in tuberculous patients are extremely rare; when they do occur they are of the exudative variety and as such clearly seen on roentgen film."

More recently, a number of authors[6,7,8,9,10,11,12,13,14] have concluded that although much less frequent, the lower lobes may be the initial site of chronic pulmonary tuberculosis. We have found tuberculous involvement in the lower lung fields often enough to warrant a review of the experience at Robert Koch Hospital.

METHOD OF STUDY

This series is a roentgenographic study of over 2,000 consecutive discharges from February, 1933, to February, 1942. The first available film, which in most instances was taken prior to admission to

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this hospital, was studied. We excluded all cases in which infiltration was present in the upper half of either lung. We further excluded all cases of primary infection tuberculosis. All cases of bronchiectasis, pleural effusion or pleural thickening were also discarded, unless there was concomitant tuberculous parenchymatous involvement. Only those cases in which the disease was confined to the lower half of the lung was considered. Plates 1 and 2 illustrate typical cases chosen. Unfortunately, during this period

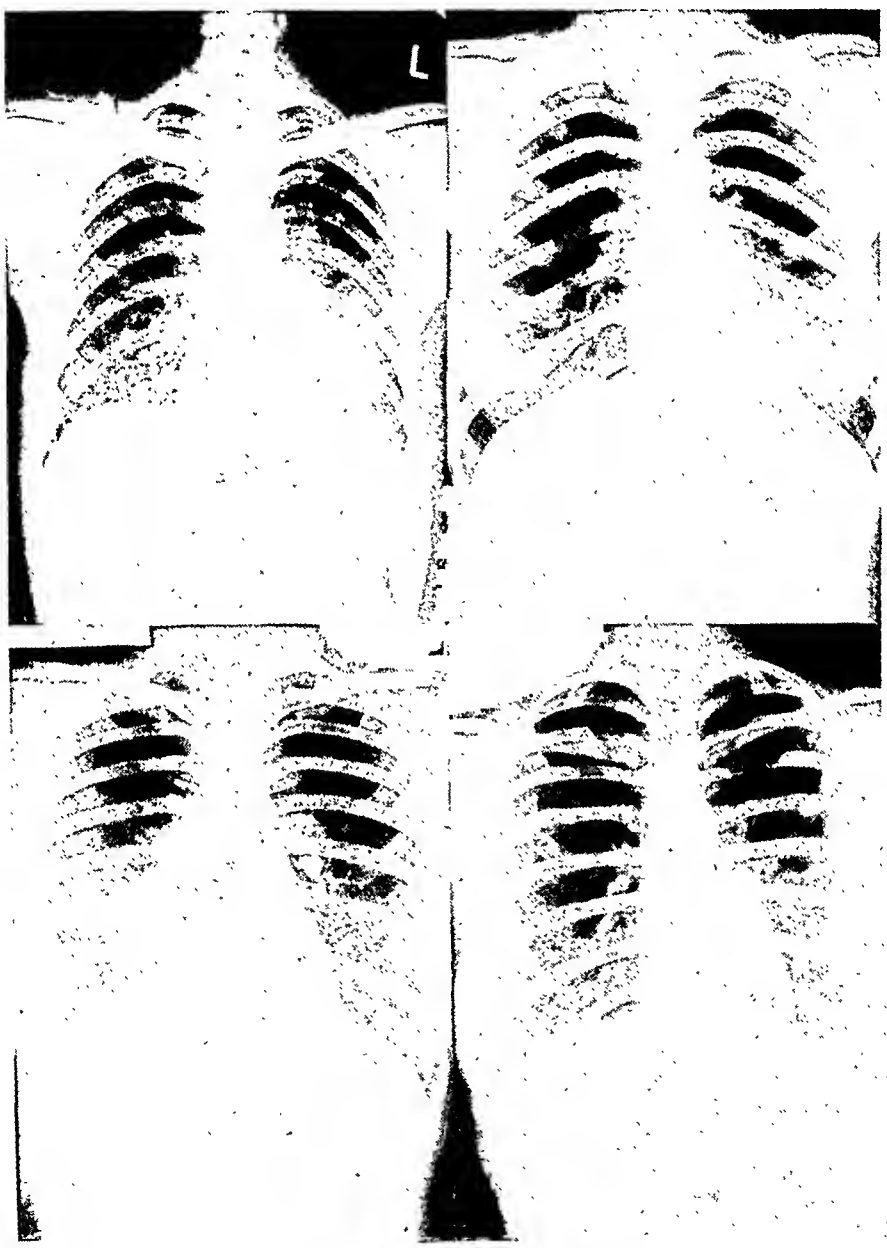

Plate I—Typical cases selected.

very few films in the lateral positions were being taken; therefore, we designate our cases as lower lung field tuberculosis rather than lower lobe tuberculosis, which most of them probably are.

PREVALENCE

There were 2,354 cases of pulmonary tuberculosis discharged from this hospital between February, 1933, and February, 1942. Of these, 63 satisfied our criteria for lower lung field tuberculosis, giving an

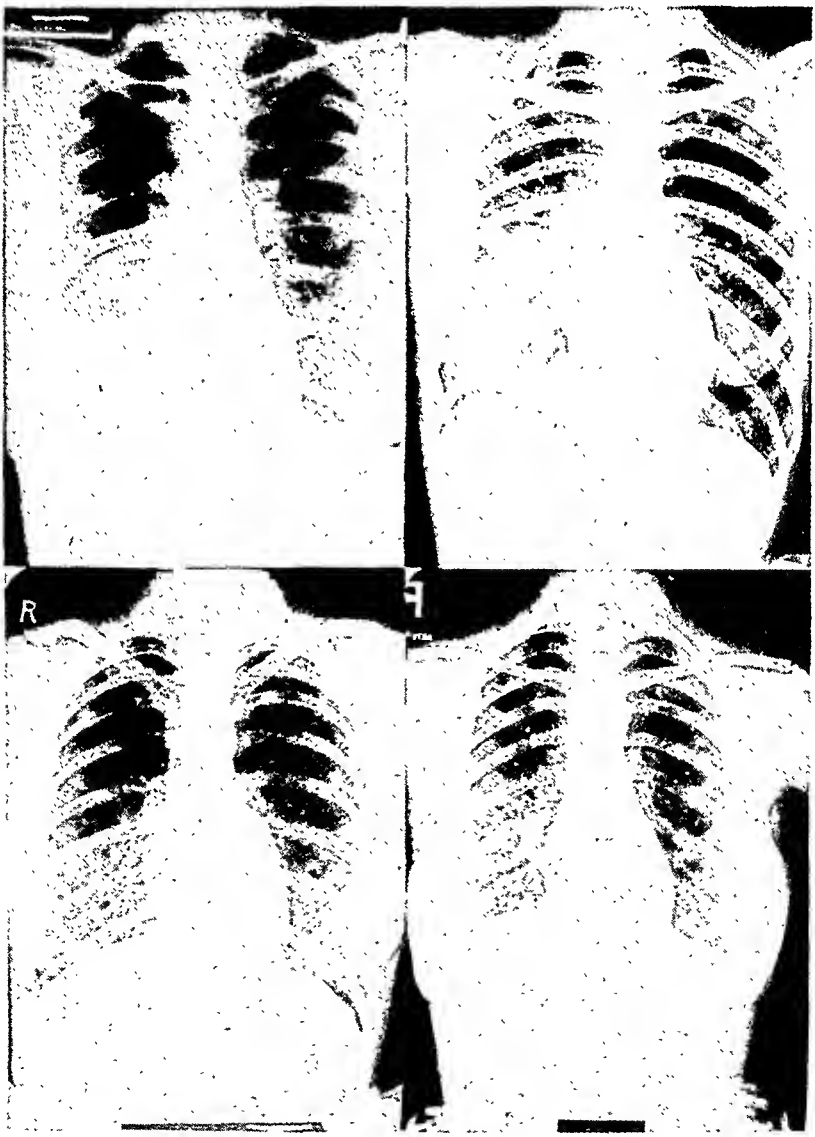

Plate II—Typical cases selected.

incidence of 2.7 per cent. In the literature there is much variation in the reported incidence, varying from 0.003 per cent[15] to 18.3 per cent.[7] The majority of the figures fall between 1.5 per cent and 5 per cent. The authors who gave the low figures reviewed series from large municipal sanatoria where the patients are usually first seen in an advanced stage of their disease. On the other hand, the authors working with smaller and more select groups seen early, report the higher incidence. For example: Ross,[7] who reported an incidence of 18.3 per cent was following a group of nurses and probably discovered their disease in the very early stages. The reason for these differences is that tuberculosis of the lower lung fields can be diagnosed as such only in the earlier stages before spreads to the upper fields have occurred.

Cases 1 and 2 demonstrate such instances. The films taken on admission appeared as ordinary chronic pulmonary tuberculosis. However, on going back to the first available films on these patients, we noted that the disease quite definitely originated in the lower lung field. Undoubtedly more such cases, where the earlier x-rays were not available, escaped our attention. Otherwise, our incidence would no doubt have been higher.

Sex—Of the 63 cases, 44 (69.8%) were female and 19 (30.2%) were male. Since the general proportion of female to male in this hospital during this period is approximately 1 to 1, these figures are significant. This is the usual experience of all observers. All report a

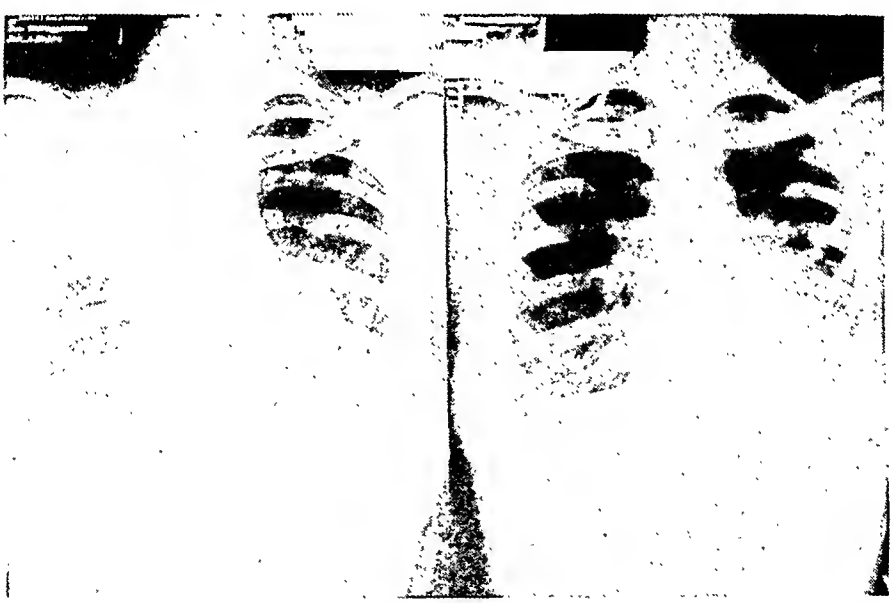

Fig. 1a *Fig. 2a*

Fig. 1a—Case 1, L. G., 23-year-old negro female. Film taken on admission to hospital. *Fig. 1b*—Case 1, L. G. Film taken at the clinic about 8 months prior to admission.

preponderance of female over male.[8,9,10,11,12] The explanation for this is obscure. An explanation has been offered by Reisner[6] based on the supposed differences in the type of respiration between males and females.

Color—We have noted no definite differences in the incidence between white and negro patients. In our group there were 43 (68.2%) whites and 20 (31.8%) negroes. These figures approximate the general proportion of white to negro in our hospital during this period. Weidman and Campbell[9] report similar findings; however, Dunham and Norton[13] claim a markedly greater prevalence among the negroes.

Age—The ages of our patients varied between 15 and 58 years. There were 49 cases (91.5%) under 40 years of age. Among the negroes, however, 90 per cent were under 30 years, the oldest negro being 33 years. Reisner,[6] Ross[7] and others[9,11,12,13] have also found a prevalence of lower lung field tuberculosis among the younger age group.

EXTENT AND DISTRIBUTION OF DISEASE

Side—Some authors[6,9,11,12,14] report a preponderance of initial involvement on the right side. We, however, have not noted any marked prevalence on any one side. There were 37 (58.7%) of the cases on the right side and 26 (41.3%) on the left.

Degree of Involvement—Of the 2,291 cases of the usual type of

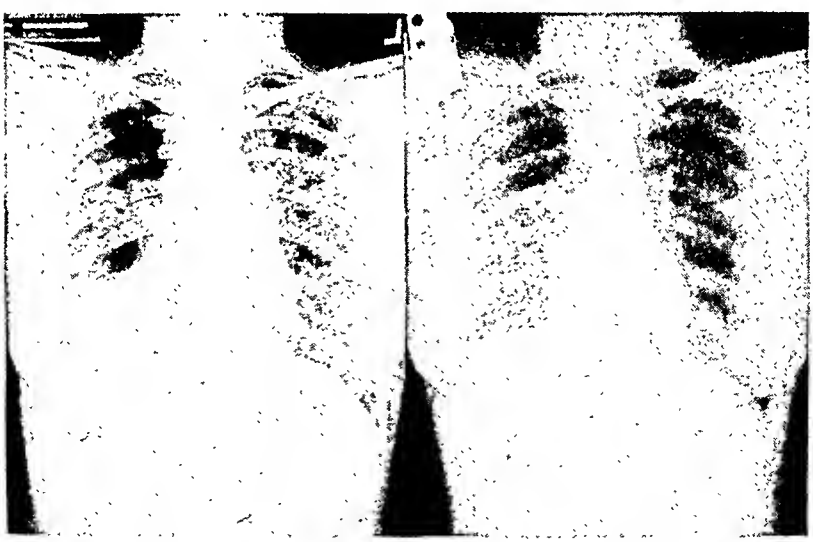

Fig. 2a *Fig. 2b*

Fig. 2a—Case 2, V. M., 25-year-old white female. Film taken on admission to hospital. *Fig. 2b*—Case 2, V. M., film taken by her private physician about 6 months prior to admission.

pulmonary tuberculosis reviewed, there were 1,672 (72.9%) far advanced; 518 (22.6%) moderately advanced; and 101 (4.4%) minimal. In the cases showing lower lung field disease there were 39 (61.9%) far advanced; 24 (38.1%) moderately advanced and no minimal cases. This was undoubtedly due to the fact that minimal tuberculosis in the lower lung field went unrecognized and, therefore, was not hospitalized. In our group, the percentage of moderately advanced was somewhat higher than for the ordinary type because after the case spread to become far advanced, the lower lung field origin very often cannot be definitely ascertained.

Pathology and Symptomatology—In respect to the mode of onset, symptoms and duration of disease prior to admission, we have found no essential differences between those cases in our series and the usual form of pulmonary tuberculosis. The majority of the cases had cavitation. All but one had a positive sputum. Over 75 per cent had a history of blood-spitting. This last figure would seem to be somewhat higher than usually seen.

TREATMENT AND PROGNOSIS

The end results in this group show that one-third (21 patients) were discharged as arrested; approximately one-third (20 patients) died, and approximately one-third (22 patients) left the hospital as quiescent, improved or unimproved. These, in general, are the same as the end results obtained in the usual type of pulmonary tuberculosis at this hospital. Of the series 44 (2/3) had received collapse therapy in some form: Pneumothorax, phrenic paralysis, thoracoplasty, pneumoperitoneum, or some combination. Of these again, the same end results were obtained, a third (15 patients) were arrested, approximately a third (11 patients) died, and approximately a third (18 patients) were quiescent, improved or unimproved. It is interesting to note that of the four cases receiving thoracoplasty, only one became arrested. In this instance the thoracoplasty was begun with the lower ribs and continued upward. Freedlander[16] reports three such thoracoplasties, all with good results. It is quite generally accepted that cavities in the lower lobe, especially in the superior division, are not very amenable to surgical collapse by thoracoplasty. Of the 19 which did not receive collapse therapy, about a third (6 patients) were arrested and a half (10 patients) died. The slightly higher death rate in this latter group was probably due to the fact that some of these patients were too sick on admission for collapse therapy.

CONCLUSIONS

1) In the differential diagnosis of lesions occurring in the lower lung field, tuberculosis should be given due consideration.

2) In a review of the discharges over a period of nine years, at least 2.7 per cent of the cases originated in the lower half of the lung.

3) Many cases of lower lung field tuberculosis escape recognition because, when first seen, spread to the upper half has already occurred.

4) Females are more likely to have lower lung field tuberculosis in the ratio of approximately 2 to 1.

5) No notable deviations from the usual were observed in regard to race, symptomatology, duration of disease, pathology and prognosis.

6) The indications for collapse therapy are the same as for the usual form of pulmonary tuberculosis. However, in an occasional case, retrograde thoracoplasty may give good results.

CONCLUSIONES

1) La tuberculosis debe recibir debida consideración en el diagnóstico diferencial de las lesiones que aparecen en la zona pulmonar inferior.

2) En un repaso de los rechazos durante un periodo de nueve años, la enfermedad se originó en la mitad inferior del pulmón en, por lo menos, el 2.7 por ciento de los casos.

3) Muchos casos de tuberculosis de la zona pulmonar inferior pasan desapercibidos porque, cuando se ven por primera vez, ya ha tenido lugar propagación a la mitad superior.

4) La tuberculosis de la zona pulmonar inferior es más frecuente en las mujeres que en los hombres en la razón del 2 a 1.

5) No se observó desviaciones de lo común dignas de atención, en cuanto a raza, sintomatología, duración de la enfermedad, patología y pronóstico.

6) Las indicaciones para la colapsoterapia son las mismas que en la forma usual de la tuberculosis pulmonar. Sin embargo, en ciertos casos la toracoplastia retrógrada puede dar buenos resultados.

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The Diagnosis of Bronchiectasis: Clinical and Roentgenological Observations*

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HISTORY

Considerable progress has been made during the past decade in the diagnosis of bronchiectasis. Intensive clinical study, supplemented by improved radiographic apparatus and technique, and advanced methods of bronchoscopy and bronchography have demonstrated that bronchiectasis is a fairly common disease, subject to early diagnosis. Hedblom considers it the "most common disease of the lungs second to tuberculosis."

Although bronchiectasis in its advanced stages has been known to clinicians and pathologists for a long time, the recognition of its earlier developmental phases dates back to the epoch-making researches of Sicard and Forestier.[1] They successfully visualized the bronchial tree by the instillation of radiopaque substances. This method, commonly practiced now, is termed bronchography. In the use of this procedure we have a reliable means of detecting the presence, location and extent of bronchiectatic disease. Iodized oil is the medium most commonly employed, although other substances are favored by some clinicians.

The early clinical and pathological studies in bronchiectasis were carried out by Unverricht,[2] Rist,[3] Singer and Graham,[4] Perkins and Burrell,[5] and Tilman.[6] Knowledge regarding bronchiectasis has been advanced in America by the work of Lilienthal,[7] Hedblom,[8] Graham,[9] Coryllos,[10] Eloesser,[11] Churchill,[12] Lloyd,[13] Andrus,[14] Overholt,[15] and others.

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*A part of the material presented in this paper was studied by the authors during their association in the Thoracic Clinic, Beth Israel Hospital, Boston. Since entering upon an active duty status in the Army, one of us has had an opportunity to observe a number of soldiers with bronchiectasis. The latter was not detected at the induction center. Following a period of observation and study at a Station Hospital, these men were finally separated from the service on the basis of a Certificate of Disability. The opinions expressed in this paper are personal, and do not in any way reflect the opinion of the office of the Surgeon General of the United States Army.

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ETIOLOGY

Bronchiectasis is found frequently in childhood and young adult life. While some consider its development on a congenital background, the majority of the writers on this subject believe that on the basis of clinical and pathological observations, bronchiectasis can be regarded as an acquired abnormality of the bronchi.

From the study of a considerable number of case histories, we noted that the majority of bronchiectatic lesions are traceable to any of the following pre-existing conditions: Recurring bronchial infection; chronic lobar and bronchiolar pneumonia; whooping cough complicated by pneumonia; acute and chronic lung abscesses; bronchial obstruction due to carcinoma; foreign body; and inflammatory cicatrix in the bronchial lumen caused by specific infection, like tuberculosis, as well as various non-specific infections. To a lesser extent, bronchiectasis may be the sequela of chronic empyema or lesions causing slow compression of a bronchus, leading to retention of secretion with subsequent infection. Thus, bronchiectasis may develop as the result of pressure by an aortic aneurysm and mediastinal or lung tumors. It may be anticipated, therefore, that bronchial infection with dilatation will occur in the distal portion of a bronchus whose lumen is obstructed either by an intrinsic or extrinsic cause. Influenza may be a predisposing factor in the subsequent development of bronchiectasis. As regards the latter, our findings are negative.

The relationship between the accessory nasal sinuses and the bronchi has raised considerable discussion. Many are of the opinion that chronic sinusitis must ultimately lead to the development of bronchiectasis; and, conversely, that sinus disease is expected to coexist in the majority of cases of bronchiectasis. In regard to this subject, while we feel that there may be in some instances a causal relationship between sinusitis and bronchial infection, our observations lead us to conclude that sinus disease is not a frequent concomitant of bronchiectasis.

PATHOLOGY

The pathology of bronchiectasis, according to Kline,[16] consists of atrophy and destruction of the muscular and elastic tissues of the bronchial wall. In cases of long standing, complete disintegration may take place. Degeneration of the bronchial wall is considered by most observers as the basis for bronchial dilatation. The inflammation and necrosis in the bronchi extend beyond the confines of their walls, however, and in the advanced cases the infectious process invades the lung parenchyma resulting in true bronchopulmonary suppuration. Whittemore[17] stressed this a number of years ago.

Aside from the destructive changes found in the bronchial walls, leading to dilatation, the bronchi are subjected to a number of indirect forces which may be responsible factors in the development of bronchiectasis. These forces are pulmonary fibrosis, chronic cough, and lobar atelectasis. Exhaustive research leads Andrus to conclude that the first two factors are unimportant. He considers lobar atelectasis the most potent single mechanism that favors the development of bronchial dilatation.

DIAGNOSIS

The clinical manifestations in bronchiectasis depend upon the degree of pathologic evolution of the disease. The mild cases are characterized by slight cough, scanty or moderate amounts of sputum, no fetor in the breath, and rarely hemorrhage. The patient's general condition is good, and physical examination at times may reveal no abnormalities. Abnormal findings, when present, consist of diminished resonance and rales over the affected lobes. The diagnosis made in these cases is usually that of chronic bronchitis. Bronchography is likely to be omitted because bronchiectasis is not suspected. The mild forms of bronchiectasis are inevitably followed by the development of progressive changes. It is, therefore, important to establish a diagnosis in the early phases of the disease, so that ensuing complications could be looked for and suitable treatment planned.

In the far-advanced stages, bronchiectasis can be diagnosed quite readily. The clinical picture is apt to be severe. Cough may be constant and exhausting because of the ever-present secretion within the bronchiectatic cavities. The sputum is abundant and may be foul. Finger clubbing is more frequent. Varying degrees of hemorrhage may occur. The patient's vital capacity and physical reserve may be impaired. At this stage the lung parenchyma is involved as well. Should bronchopulmonary drainage become impaired, severe sepsis will supervene, characterized by chills, sweats, hyperpyrexia, and prostration.

COMPLICATIONS

In the advanced stages of bronchiectasis, any of the following manifestations may be present: hemorrhage, bronchopneumonia, atelectasis and empyema. Hemorrhage is common, and according to Hedblom, it occurs probably more often in this disease than it does in tuberculosis. Hemorrhage results from ulceration of the bronchial wall arteries. It may be slight, producing blood-streaked sputum, or severe enough to prove fatal.

Bronchopneumonia and bronchiectasis are frequent concomitants, the former occurring as a complication of the latter. How-

ever, this association is not commonly thought of, and is, therefore, easily overlooked. As a complication of bronchiectasis, bronchopneumonia presents characteristic clinical and roentgenologic manifestations, except that the patient is usually not toxic as compared with the primary type of pneumonia, and convalescence is usually quite rapid.

In a comprehensive study of a series of cases of bronchiectasis, Warner[18] notes an incidence of one attack of bronchopneumonia in fifty per cent of the cases, and an incidence of more than one attack in twenty-five per cent of the cases.

In offering an explanation of the mechanism responsible for this complication, Eloesser considers it due to the formation of mucous plugs in the infected bronchi, with resulting retention of secretion, favoring infection of healthy bronchi, thus inducing a bronchopneumonia.

Atelectasis is an important factor in the production of bronchiectasis, and occurs with relative frequency as a complication during its development. It results from obstruction in the bronchial lumen by inspissated secretion, or is due to the formation of cicatrix caused by chronic inflammation. The extent of the atelectasis depends upon the caliber of the obstructed bronchus, and upon the degree of occlusion. In this connection it should be mentioned that when the atelectasis becomes permanent, the involved lobe undergoes a diminution in size. Jones and Cournand[19] have named this abnormality as the "shrunken lobe," and have stressed the importance of its recognition in cases of chronic bronchial infection as an indication of a probable underlying bronchiectasis.

Empyema is a serious complication of bronchiectasis, and is comparable to the rupture of a lung abscess into the pleural cavity. In either instance, treatment consists of pleural drainage. It may be expected to occur in those cases of long standing bronchial infection that are accompanied by severe lung necrosis, inducing a perforation into the pleural space, resulting in a bronchopleural fistula.

RADIOGRAPHIC FINDINGS

The x-ray findings in bronchiectasis vary considerably, and the diagnosis of bronchiectasis based upon plain films is not conclusive. Yet the disease should be suspected when the following are present: (1) prominence of the bronchial markings, (2) rounded areas of increased radiance, the so-called "honeycombs," (3) lobar or lobular atelectasis, and (4) areas of mottled densities.

The radiographic shadows just mentioned are rather characteristic, and should be considered of diagnostic significance, especially when the history of the case is consistent with bronchiectasis. For the purpose of the present discussion, the term "mottled densities"

is used interchangeably with "pneumonic infiltration," such as appears in Table III. And further, the incidence of x-ray shadows, such as "bronchiectatic cavity with fluid," although not commonly mentioned among the radiographic shadows as suspicious of bronchiectasis, shows a considerable incidence in our series, while the findings of "pneumonitis with fluid" and "density resembling neoplasm" are of rare occurrence.

BRONCHOGRAPHY AND BRONCHOSCOPY

Bronchography is an important and reliable procedure in the diagnosis of bronchiectasis. In fact, it is the method of choice in examining cases which, either from the clinical history or ordinary radiographs, suggest the presence of a bronchiectatic lesion. Fluoroscopic examination is essential for the purpose of localizing the site of the lesion prior to the instillation of lipiodol, and to direct the latter into the proper bronchus by positioning the patient. "Spot" films during fluoroscopy give "close-up" views of the involved portions of the lungs. Lateral films are important to outline bronchial dilatations which may be obscured by the cardiac shadow in the postero-anterior view.

It should be stressed at this point that, in those cases in which clinical evaluation and radiographic findings warrant a diagnosis of probable bronchiectasis, and the terminal bronchi cannot be visualized on account of inspissated secretion and/or cicatricial stenosis in the main bronchus, preliminary bronchoscopy with suction will help to attain this end.

DIFFERENTIAL DIAGNOSIS

The principal conditions from which bronchiectasis is to be differentiated are tuberculosis, foreign body in the bronchus, bronchial carcinoma, and lung abscess. Tuberculosis may be mistaken for bronchiectasis because of cough, sputum, hemoptysis, and rales. These findings are especially apt to deceive the observer if rales are present in the apical portion of the lung. Foreign body, opaque or non-opaque, as has been shown by Jackson,[20] is not infrequently responsible for producing bronchopulmonary suppuration. Bronchoscopy is indispensable in locating foreign bodies, especially those which are non-radiopaque. Atelectasis is a common finding on the radiograph in the presence of foreign body. Carcinoma in the bronchial lumen favors retention of secretion. This in turn leads to infection, and ultimately, bronchial dilatation. In the experience of Graham, fully ten per cent of cases of bronchiectasis are found to have a concomitant primary bronchial or metastatic pulmonary neoplasm.

This observation carries the implication that in the presence of a

bronchiectasis, carcinoma should be suspected. Chronic suppuration due to lung abscess has a characteristic history: It begins acutely, following an episode of pulmonary complication after an operation, or it may be the aftermath of an acute respiratory infection, such as pneumonia. Moreover, abscess tends to develop with striking symptomatology; namely, hyperpyrexia, chills, sweats, and prostration. Bronchiectasis, on the other hand, usually develops slowly; and is rarely ushered in by violent symptoms.

PATHOLOGIC CLASSIFICATION

Bronchiectasis may be divided into four main types, depending upon the predominating pathology and its location:

1) Ulcerative bronchiectasis produces varying degrees of hemorrhage from blood streaks to amounts so large as to threaten life.

2) Stenotic bronchiectasis favors the development of atelectasis, which by virtue of its interference with bronchial drainage favors progression of the infection.

3) Fibrotic bronchiectasis is characterized by an abundance of peribronchial fibrosis. According to the theory propounded by Lloyd, this type tends to favor progressive bronchial dilatation in the presence of infection. He points out that pulmonary fibrosis produces a traction mechanism which is responsible for bronchial dilatation.

4) The "dry hemorrhagic" type of bronchiectasis. Pinchin and Marlock[21] have described a "dry hemorrhagic" type of bronchiectasis, and have offered the speculation that it develops on a congenital basis. The patients presenting this type of bronchiectasis usually have no cough or sputum, but are noted to suffer from recurring hemorrhage. Bronchial dilatation is found in this type of patient following the instillation of lipiodol. The authors have seen one case of hemorrhagic bronchiectasis in a middle-aged patient who appeared at the clinic because of several episodes of profuse hemoptysis. There was no history of respiratory disease or symptoms prior to the hemorrhage. Physical examination and radiography were negative. A bronchographic study revealed the presence of an extensive bronchial dilatation in the right middle lobe. We designated this case as one of hemorrhagic bronchiectasis, and felt it was on a congenital basis.

ANATOMICAL VARIETIES

Aside from the occasional fusiform bronchial dilatation observed, the two distinctive types most commonly observed are the cylindrical and saccular forms. Cylindrical bronchiectasis is the most common variety, and is found almost always in the base of the lung. The saccular type is found almost always in the upper portion of the

lung. Quoting Fleischner,[22] "Bronchial obstruction preceding the process of ectasia confines itself to the larger caliber bronchi in the dependent portions of the lung, while only the smallest bronchial branches are involved in the upper part of the lung. And, since drainage from the upper lobe is facilitated by gravity as contrasted with the poor drainage of secretion from the dependent portion of the lung, it follows that bronchial dilatation will be of the saccular type in the upper lobe, and cylindrical in nature in the lower lobe." It is of interest that the saccular type of bronchiectasis presents not infrequently on the plain films what appear like cavities filled with fluid, and show a fluid level. X-ray findings of this nature are designated as "bronchiectatic cavity."

EARLY DIAGNOSIS

Early diagnosis of bronchiectasis is important because in its early developmental phases the disease is apt to be unilobar and/or unilateral. Besides, advanced disease tends to produce serious complications, such as severe hemorrhage, parenchymatous abscess formation with profound sepsis, and empyema caused by bronchopleural fistula resulting from severe lung necrosis. A delay in the diagnosis of the early cases makes the treatment of advanced cases difficult and unsatisfactory on account of their low vital capacity and poor physical reserve. On the other hand, cases of bronchiectasis in their more favorable stages can be treated more effectively and with a low operative mortality rate by the accepted methods of surgery.

EVALUATION OF MATERIAL

Our observations are based upon a study of an unselected group of cases of bronchiectasis occurring in military as well as civilian practice. Visualization of the bronchi was confined to bronchography, except in those cases that presented difficulty in lipiodol instillation, evidence of atelectasis, or suspicions of neoplasm. In the latter, bronchoscopy with aspiration of secretion was performed prior to the instillation of lipiodol.

The clinical material observed was subjected to the following analyses: antecedent history of respiratory disease, such as whooping cough, pneumonia, bronchitis, empyema and influenza; the presence of rales, hemoptysis, clubbing of the fingers, foul sputum, evidence of bronchopneumonia; coexisting sinusitis, bronchial asthma, and carcinoma; evidence of atelectasis, neoplasm, and anatomical involvement.

The ages of the patients varied between twelve and sixty-five years. The total number studied is sixty-two cases.

The following tables illustrate the observations made in a combined group of military and civilian cases, a total of sixty-two cases.

However, in the military component, because of the transfer of seventeen cases, out of a total of thirty-two studied, to a Veterans' Hospital for further care, it was possible to evaluate clinically only fifteen cases. Hence, in Tables I and II the study of the incidence

TABLE I

ANTECEDENT EPISODES OF RESPIRATORY DISEASE*

Probable Etiology	*Time of Occurrence*	*Case Incidence*	*Per Cent*
Chronic Cough	Adult Life	12	26
Pneumonia	Childhood	7	
	Adult Life	7	
	Total	11	24
Chronic Bronchitis	Adult Life	9	20
Chest Colds	Adult Life	6	13
Whooping Cough	Childhood	4	8
Empyema	Childhood	2	
	Adult Life	2	
	Total	4	8
Pneumonia with Empyema	Childhood	2	4
Whooping Cough with Pneumonia	Childhood	1	2

*Table represents the combined military and civilian case histories, a total of forty-five.

TABLE II

CLINICAL FEATURES*

Clinical Pathology	*Case Incidence*		*Per Cent*
Rales		42	93
Bronchopneumonia	(once)	7	
	(many times)	13	
	Total	20	44
Hemoptysis		16	33
Clubbed Fingers		7	15
Foul Sputum		6	13
Sinusitis		6	13
Bronchial Asthma		5	11
Bronchial Carcinoma		3	6

*Table based upon a total of forty-five cases. The concomitant conditions of sinusitis, bronchial asthma, and bronchial carcinoma were not encountered among the military cases in this series.

of clinical features in the military group added to thirty cases in the civilian group makes for a total of forty-five. Analysis of data in Tables III and IV is based upon a total of sixty-two cases. A detailed discussion of the pertinent data noted in the military cases whose clinical records are available will be presented when bronchiectasis found in the armed forces is discussed in another part of this paper.

TABLE III

RADIOGRAPHIC FINDINGS—PLAIN FILMS*

Pathology	*Civilian*	*Army*	*Total*	*Per Cent*
Increased Bronchial Markings	30	17	47	74
Honeycombs	5	7	12	19
Atelectasis	7	4	11	17
Bronchiectatic Cavity with Fluid	9	0	9	14
Pneumonic Infiltration	4	1	5	8
Pneumonitis with Fluid	1	0	1	1
Density Resembling Neoplasm	1	0	1	1

*Total number of cases analyzed—sixty-two; thirty-two are military, thirty are civilian.

TABLE IV

INCIDENCE OF ANATOMICAL INVOLVEMENT*

Location	*Civilian*	*Military*	*Total*	*Per Cent*
Left lower lobe	18	14	32	50
Right lower lobe	7	13	20	31
Right middle lobe	3	5	8	12
Bilateral lower lobes	3	8	11	16
Right upper lobe only	None	None	None	None
Left upper lobe only	None	None	None	None
Bilateral apical	1	None	1	1

*Analysis is based upon a total of sixty-two cases; thirty-two military and thirty civilian.

DISCUSSION OF TABLES

In Table I we note a considerable incidence of respiratory disease antedating the present illness, occurring in infancy and childhood. Also, the clinical manifestations in the past history, in the order of greatest frequency, were chronic cough, pneumonia, chronic bronchitis, chest colds, whooping cough and empyema. It is apparent that not only is chronicity the keynote in the development of

bronchiectasis, but it is also a guide in the evaluation of those chest conditions that may appear innocuous clinically at the time of initial contact with the patient.

In Table II the constancy of rales in nearly all of the cases examined (93%) is noteworthy. The latter finding is important when rales persist for a long time after convalescence is established, and should make one suspicious of the presence of a chronic bronchial infection. As regards the occurrence of bronchopneumonia manifestations, as stressed by Warner, we found a considerable incidence of this clinical feature. It is obvious that, unless the past history in a case of apparent bronchopneumonia is looked into, the relatively rapid recovery of the majority of these may lead to an erroneous conclusion, namely, that the case was one of an uncomplicated nature; that it was primary in character. In the case of the soldier it will mean return to duty at an early date, only to continue with the symptoms antedating the present illness. Inevitably, this soldier will re-enter the hospital at some future date with a recurrence of chest difficulty. Such hospital readmissions can contribute to a disruption in the company or battery organization, should the patient involved be a non-commissioned officer holding a key job.

As regards hemoptysis, the occurrence of this clinical feature in fully one-third of the cases stresses not only the importance of this symptom as a guide in diagnosis, but also the frequency of hemorrhage that is seen in bronchiectasis and not generally appreciated.

Clubbing of the fingers and foul sputum are relatively infrequent, although the general opinion is that these clinical features are of common occurrence in advanced bronchiectasis.

In our series we found the incidence of concomitant sinusitis relatively low, notwithstanding the frequently expressed opinion to the contrary. It can be stated that in our observations there was a definite lack of relationship between accessory nasal sinus disease and bronchiectasis, insofar as the former causing the latter is concerned. Moreover, our series of bronchiectasis was complicated by sinusitis in a very small proportion of the cases, and the pathology by x-ray consisted of only thickened mucous membrane with no outstanding clinical symptomatology.

Bronchial asthma was observed in five cases. These occurred in civilians, and we have no reason to believe that it was in any way contributory to the establishment of the bronchiectasis.

Bronchial carcinoma was a concomitant finding in three cases. It occurred in the civilian component of the group studied. Moreover, although the causal relationship between the tumor and the bronchiectatic disease is not definitely known in these cases, a possible relationship is obvious, as stressed by Graham.

Analysis of Table III throws light on some of the important radiographic signs to be looked for on the plain films in cases suspected of having bronchiectasis clinically, as pointed out by Andrus. "Increasing bronchial markings" is the outstanding finding and is of greatest frequency. In fact, at times the greatest amount of bronchial disease makes itself evident on the plain films only in the form of an increase in the bronchial markings. The radiographic shadows designated as "honeycombs" show a considerable incidence. The presence of these honeycomb shadows is nearly always indicative of advanced disease. Atelectasis was present in nearly one-fifth of the cases, a fair incidence. The presence of what is designated as "bronchiectatic cavity" with fluid points to two important elements in the pathology of the disease, namely, severe dilatation in the bronchus affected, and the phenomenon of accumulation of mucopurulent secretion to a degree that it resembles a pulmonary abscess cavity. The occurrence of shadows designated as "pneumonic infiltration" is pertinent from the standpoint of differential diagnosis, because this finding in the presence of symptoms consistent with an acute lung infection could lead to an erroneous assumption that we are dealing with an uncomplicated pneumonitis. Shadows of this nature are generally caused by an extension of the infectious material from previously infected bronchi into healthy bronchi, inducing infection and a concomitant lobular atelectasis.

The rare finding of "pneumonitis with fluid," in one case out of sixty-two, points to the radiographic appearance of bronchopulmonary pathology in a case of bronchiectasis that has extended into the lung parenchyma, producing a pneumonitis with an abscess cavity. This is the most severe form of parenchymatous extension from a pre-existing bronchiectasis. In this type of case, if the pathology persists long enough, we expect to find foul sputum and/or finger clubbing. Clinically, this is the type of patient that is apt to present symptoms of severe bronchopulmonary sepsis, characterized by hyperpyrexia, chills, sweats and prostration.

Lastly, the finding of "density resembling neoplasm," an incidence of one out of sixty-two cases, points to a pathological entity resulting from two factors, namely, an atelectasis due to bronchial obstruction and an accompanying pneumonitis. A differential diagnosis can generally be arrived at if bronchoscopic examination is negative for bronchial tumor, and bronchial mucosa changes consistent with chronic suppuration is found in the presence of a clinical history consistent with bronchiectasis.

Analyzing Table IV, we find the greatest incidence in anatomic distribution (50%) is in the left lower lobe. This is the most dependent portion of the lungs, and the least efficient from the standpoint of adequacy of bronchial drainage. Next in frequency of

location is the right lower lobe (31%). The right middle lobe incidence of 12 per cent is substantial. Bilateral involvement, lower lobes, shows an incidence of 16 per cent. This points to a considerable degree of prevalence of the disease as being of a bilateral character. Not a single case was observed in which the disease was confined to the right or left upper lobes alone. One case was observed, however, occurring in a civilian, that presented extensive bilateral upper lobe involvement. This patient also had bronchiectatic lesions at both lower lobes. This case was observed for several years because of recurring fever, bloody sputum, apical rales, and radiographic shadows consistent with a bilateral apical tuberculosis. The patient succumbed to a septic bronchopneumonia, and the anatomical examination revealed extensive bilateral apical bronchiectasis. No trace of tuberculosis was found anywhere in the lung sections.

BRONCHIECTASIS IN THE ARMED FORCES

The diseases most commonly seen in the Respiratory Section of the Station Hospital are nasopharyngitis, bronchitis, atypical pneumonia, bacterial pneumonia and tonsillitis. Of particular interest, however, is a small but not inconsiderable number of cases of respiratory disease that reach the wards which have special significance. The latter are important because they point to a potential diagnosis of bronchiectasis. They present peculiar clinical features and for practical purposes can be divided into three categories: (1) Those that appear at the dispensary because of chronic cough and sputum. (2) Those that come to the admitting office for sick call because of blood spitting, often times not aware that they have had chronic pulmonary disease. (3) This group, easily confounded with an acute bacterial bronchopneumonia, consists of those cases of bronchiectasis that have experienced an endogenous extension from diseased into healthy bronchi. This results in a symptom complex consisting of fever, cough, expectoration and mild toxemia. A detailed study of this type of apparently acute lung infection will almost invariably reveal a history of chronic chest trouble. Physical examination in these cases almost invariably reveals rales at one or both bases, and the x-rays present shadows that are consistent with a bronchopneumonia. When convalescence is established, which occurs rather rapidly in most cases, a bronchographic examination will reveal varying degrees of bronchiectasis.

Returning to a discussion of the first two types of cases, namely those presenting cough and sputum, and those presenting hemoptysis as the chief complaint, in either instance these soldiers may be sent to the hospital dispensary for the purpose of admission to evaluate as to etiology. During their hospital stay they are studied

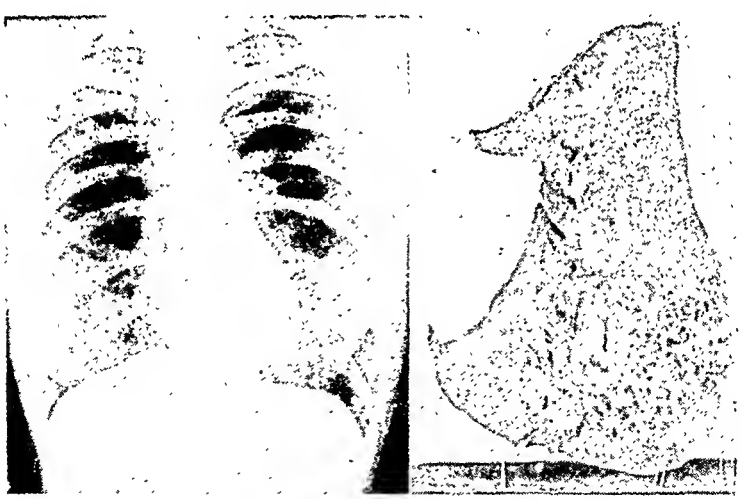
bacteriologically, radiographically, and by means of bronchography. When the diagnosis of bronchiectasis is confirmed they are separated from the Army on the basis of a Certificate of Disability.

It should be emphasized that the incidence of bronchiectasis in the Army does not exceed that found in the civilian population. It was present before induction, and for the obvious reason of clinical quiescence, cases of bronchiectasis can be missed readily at the time of induction. Moreover, because of the usually high level of nutritional and physical fitness that obtains in the majority of cases, acceptance for military service is not uncommon.

At this juncture it should be stated that a certain number of prospective recruits will deny when interviewed that they ever had any chest trouble. (Possibly these men are motivated by patriotism to do so.)

As regards the regulations pertaining to the acceptance of men with lung pathology for service, the mobilization regulations (*MR 1-9*) stipulate that bronchiectasis as well as chronic severe bronchitis are disqualifying. Hence, when a diagnosis of either condition is made, these soldiers are separated from the service after they have appeared before a board of medical officers designated as a

CIVILIAN GROUP



Case Ia, Fig. 1 *Case Ia, Fig. 2*

Case Ia, Fig. 1—12/6/32. The radiograph shows infiltration with fibrosis in both apices, more marked on the right, in the infraclavicular region. X-ray diagnosis: Bilateral apical tuberculosis, more marked on the right. *Case Ia, Fig. 2*—Specimen of section throughout entire left lung. Patient died of a septic bronchopneumonia. The upper lobe shows an extensive bronchopneumonia with numerous bronchiectatic cavities interspersed throughout. The right lung had similar pathology. Note the marked fibrous demarkation between the upper and lower lobes. Considerate bronchiectasis is also present in the left lower lobe.

C.D.D. board, i.e., the board is authorized to recommend discharge on a Certificate of Disability.

In this connection it should be stated that upon discharge from the Army, if in need of hospital care, the soldier will be admitted to a Veterans' Hospital for treatment under existing War Department Circulars (W. D. Cir. 103, Section 5, April 15, 1943).

Up to the time of the present report, the diagnosis of bronchiectasis was made in thirty-two cases admitted to the Respiratory Section of a Station Hospital. The hospital began to function three years ago. Of this group seventeen were discharged from the Army and were transferred to Veterans' Hospital for further care. The remaining fifteen cases were separated from the service, but returned to their homes. Thus, it is possible to make a clinical study only of the latter group, because the records of the former are now the property of the Veterans Bureau.

Observations made in the group of cases whose records are available concern the study of factors in etiology, the clinical features, x-ray findings prior to bronchography, and the anatomical involvement. One case gave a history of pneumonia and empyema in childhood. Seven cases had pneumonia; of these three had it once, while four cases had it several times. Five gave a history of frequent chest colds and six gave a history of chronic cough. One case is of particular interest because bronchiectasis developed as a

CIVILIAN GROUP

Case IIa, Fig. 1 *Case IIa, Fig. 2*

Case IIa, Fig. 1—2/26/37. X-ray interpretation: "There are numerous rounded areas of increased radiance ('honeycomb') visible in the lower portion of the right lung field." *Case IIa, Fig. 2*—1/27/38. Bronchogram: "Extensive saccular dilatation of the terminal bronchi in the right middle and lower lobes, with extensive pneumonitis."

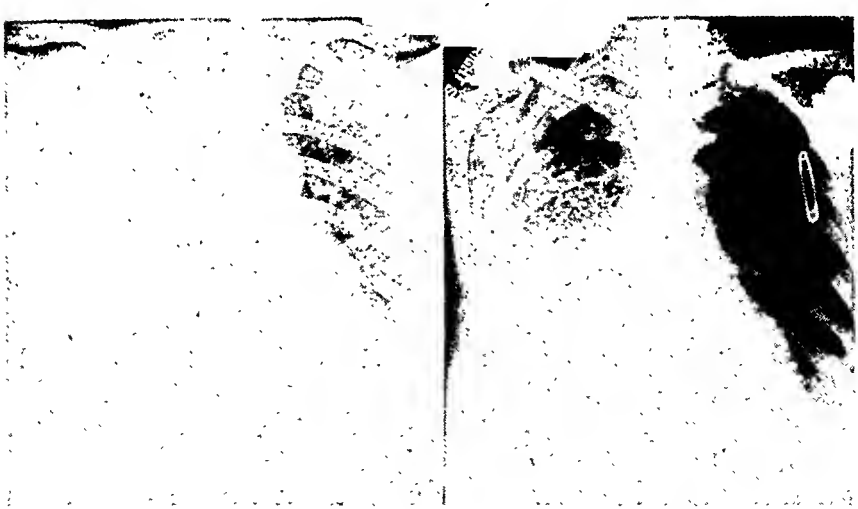
complication of an atypical pneumonia. This soldier's past history was negative for chest disease; the symptomatology and radiographic studies in the hospital were characteristic of atypical pneumonia; cough and expectoration of large amount of foul sputum appeared during the period of recovery from the initial phase of the illness. Bronchographic examination confirmed the clinical diagnosis of bronchiectasis, and he has since been transferred to a general hospital for definitive treatment.

The clinical features present at the time of admission were as follows: one had clubbing of the fingers; two cases had foul sputum. Hemoptysis was present in three. Seven cases had a bronchopneumonia on admission, clinically and roentgenographically. All except one had rales at one or both bases. As for concomitant diseases discussed in the civilian group, namely, bronchial asthma, sinusitis, and bronchial carcinoma, none of these was found in the military group.

The incidence of characteristic x-ray findings prior to the instillation of lipiodol was as follows: Seventeen out of a total of thirty-two had increased bronchial markings. Seven had honeycombs. Atelectasis was found in four cases. One case presented pneumonic infiltration.

As regards the anatomical distribution in the soldier group, the following findings were noted: Fourteen cases out of the total of

CIVILIAN GROUP



Case IIIa, Fig. 1 *Case IIIa, Fig. 2*

Case IIIa, Fig. 1—X-ray 2/26/36: "The entire lung field on the right, right border of the heart, and right diaphragm are obscured by a large amount of fluid." *Case IIIa, Fig. 2*—6/24/36. Following lipiodol instillation through the drainage sinus there is revealed an extensive cylindrical type of bronchiectasis situated in the middle lobe. Note lipiodol in the trachea.

thirty-two had disease in the left lower lobe. Thirteen had it in the right lower lobe. The right middle lobe was involved in five cases. The disease was found in the lower lobe bilaterally in eight cases. No apical involvement was noted in any of the military group.

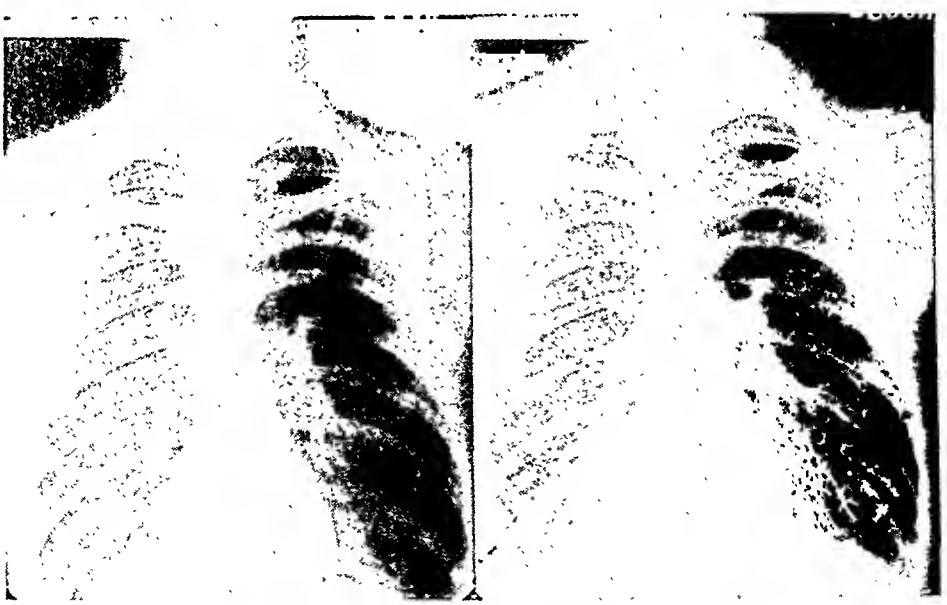
CASE REPORTS (CIVILIAN)

Case Ia—Age 22, female, with a history of several sanatorium admissions because of chronic cough, sputum, hemoptysis, and bilateral apical rales; was observed at the Thoracic Clinic for about a year. Findings during the latter period were bilateral apical rales, recurring hemoptysis, and cough and sputum. The clinical diagnosis was tuberculosis. This was checked by radiography which pointed to bilateral apical infiltration with fibrosis consistent with tuberculosis. The patient succumbed to a septic bronchopneumonia. Post mortem examination revealed extensive bronchiectasis involving both apices bilaterally. There was a good deal of bronchiectasis in the lower lung portions as well. No evidence of tuberculosis anywhere. This case illustrates the importance of differential diagnosis, and how bronchiectasis in the upper lobe can be mistaken for tuberculosis.

Case IIa—Age 55, male, came to the clinic with symptoms of cough and copious expectoration of many years' duration. No history of specific antecedent disease. Physical examination revealed numerous rales at right base; no foul sputum or clubbed fingers; excellent nutrition. The clinical diagnosis was bronchiectasis.

Case IIIa—Female, age 60. Admission diagnosis was acute empyema, right chest. Past history: pneumonia and empyema at 20 years of age

MILITARY GROUP



Case Ib, Fig. 1 *Case Ib, Fig. 2*

Case Ib, Fig. 1.—Plain film: "Marked prominence of the bronchial markings and 'honeycombs' bilaterally." *Case Ib, Fig. 2*—Bronchogram: "Cylindrical bronchiectasis in left lower lobe, and saccular bronchiectasis in the right middle lobe."

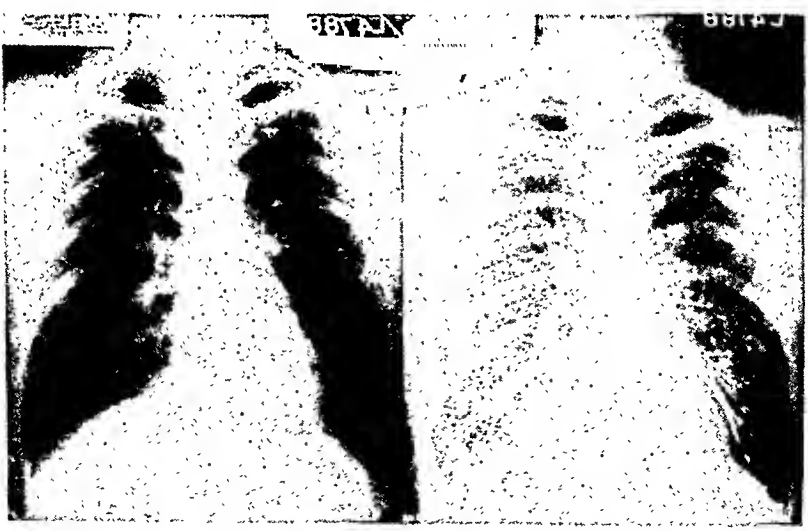
with uneventful recovery, except for a residual cough and scanty sputum which have persisted to date. Had been in good health and nutrition prior to present illness. Operation by rib resection. Convalescence was uneventful, and a bronchogram was obtained by the instillation of lipiodol through the drainage tube. This procedure revealed the passage of the lipiodol from the pleural cavity into the middle and lower lobes and into the trachea. A bronchopleural fistula had resulted from lung perforation in the presence of severe bronchopulmonary disease, causing acute empyema. It is of interest that the patient was well clinically prior to the development of this complication. This case is an example of one of the serious possibllities in the evolutlon of bronchiectasis.

CASE REPORTS (MILITARY)

Case Ib—Age 24, entered Army by enlistment in 1939. Entered hospital on January 28, 1942, with the following symptoms: cough and sputum of two years duratlon. Previous hospital admisslon at Fort Benning for the same complaints in 1941. Past history: pneumonia on three occasions in civilian life. Reason for present admission was to determine fitness for combat duty. Physical examination: well developed and well nourished; no fever; four ounces of mucopurulent sputum in twenty-four hours; rales at both bases; no foul sputum, hemoptysis, or finger clubbing. This soldier was found to have extensive bronchiectasis bilaterally. Condltion excellent. He was separated from the service on a Certificate of Disability.

Case IIb—Pvt., age 34, inducted with ten months service, was admltted to the Station Hospltal on January 12, 1942. Chief complaint: cough and sputum of several years' duratlon prior to induction. Past history: always

MILITARY GROUP



Case IIb, Fig. 1 *Case IIb, Fig. 2*

Case IIb, Fig. 1—"Plain films show prominent bronchial markings at the right base and emphysema at the left base." *Case IIb, Fig. 2*—Bronchogram: "Extensive bronchiectasis involving the left lower lobe." *Comment*: In this case we see how advanced disease in the left lower lobe produced a compensatory mechanism as evidenced by the production of considerable emphysema of the lobe affected.

in good health, except that he had pneumonia at fifteen years of age, and again two years prior to induction. On latter occasion said to have had bronchopneumonia. Has also had very many chest colds that were accompanied by bloody sputum, for very many years. Physical examination: well developed and well nourished; sibilant and sonorous rhonchi at both bases.

Case IIIb—Pvt., age 24, inducted with seven months service, and no previous Army hospital admission, was admitted to the Station Hospital on August 14, 1941. Chief complaint: chronic cough and foul sputum during previous year. Past history: cough of many years duration and copious sputum accompanied by hemoptysis. Present illness: does not feel sick, but cough has increased of late, and sputum, which is foul, is also bloody. Physical examination: well developed and well nourished, non-toxic; no finger clubbing; chest shows rales at both bases.

CONCLUSIONS

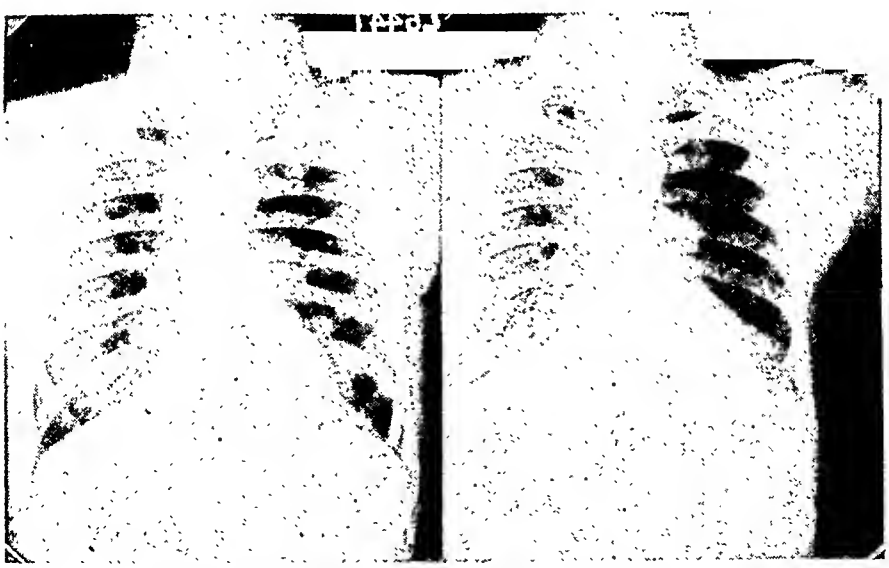
1) Bronchiectasis is a very common disease.

2) It can be diagnosed in its earlier developmental phases, but is overlooked, chiefly because of the apparently innocuous manifestations during this period.

3) Respiratory disease occurring in childhood and young adult life should always be kept in mind as a possible forerunner of bronchiectasis.

4) Bronchiectasis is capable of producing serious complications, such as hemorrhage, empyema, and septic pneumonia.

MILITARY GROUP



Case IIIb, Fig. 1 *Case IIIb, Fig. 2*

Case IIIb, Fig. 1—"Plain films show prominent bronchial markings in right lower chest with 'honeycombs' in this area." *Case IIIb, Fig. 2*—Bronchogram: "Extensive bronchiectasis with bronchiectatic cavity involving the right lower lobe." *Comment*: This soldier was separated from the service on a Certificate of Disability. He showed severe bronchopulmonary suppuration.

5) The importance of bronchography cannot be overemphasized, and no suspected case should be dismissed from observation without it.

6) The military group studied does not differ in any respect from the civilian group which serves as a comparison.

7) It is the opinion of the authors that the aggregate number of cases of confirmed bronchiectasis found in the armed forces constitutes a fair proportion of the total number of inductees that are being separated from the army on the basis of a Certificate of Disability. Thus, out of a total of 1753 cases observed at the Station Hospital since September, 1940, and separated from the service for various causes, 32 cases were discharged because of bronchiectasis, an incidence of 2 per cent. Similar data have been published in the Army Medical Bulletin, October, 1943.

8) A group of cases of bronchiectasis consisting of civilian and military components is discussed. Clinical and roentgenological observations in the latter group are essentially the same as in the former. Episodes of respiratory disease prior to the development of bronchiectasis, clinical manifestations and roentgenological signs are essentially the same in both groups.

CONCLUSIONES

1) La bronquiectasia es una enfermedad muy común.

2) Puede hacerse el diagnóstico en las fases más tempranas de su desarrollo, pero se la pasa por alto, principalmente porque los síntomas durante este período son aparentemente innocuos.

3) Se debe tener presente que enfermedades del aparato respiratorio en la niñez y la juventud pueden ser posibles precursoras de la bronquiectasia.

4) La bronquiectasia puede producir complicaciones graves, tales como hemorragia, empiema y neumonía séptica.

5) Es imposible exagerar la importancia de la broncografia, y no debe descontinuarse la observación de ningún caso sospechoso sin haberla llevado a cabo.

6) El grupo militar estudiado no es, en ningún respecto, diferente del grupo civil con el que se comparó.

7) Opinan los autores que el número de casos de bronquiectasia comprobada que se descubrió en las fuerzas armadas constituye una proporción apreciable del número total de reclutas dados de baja del ejército con Certificados de Incapacidad. De un total de 1753 casos observados en el Hospital del Puesto Militar desde Septiembre de 1940, y separados del servicio por varias causas, 32 casos fueron dados de baja por bronquiectasia, o sea una proporción del 2 por ciento. Se ha publicado datos semejantes en el Boletín Médico del Ejército de Octubre de 1943.

8) Se discute un grupo de casos de bronquiectasia que consiste de elementos civiles y militares. Las observaciones clinicas y roentgenológicas del segundo grupo son, en lo esencial, idénticas a las del primer grupo. Los ataques de enfermedades respiratorias previas al desarrollo de la bronquiectasia, los síntomas clínicos y los signos roentgenológicos son, en lo esencial, idénticos en ambos grupos.

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Boeck's Sarcoid*

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I do not believe there is a great deal to be gained by a review of the history of Boeck's sarcoid. I merely wish to remind you that it is being reported with increasing frequency and so must be considered in any chest diagnosis.

I wish to very briefly summarize some of the salient features regarding Boeck's sarcoid and then review a case that has been under my observation for several years.

ETIOLOGY

The various theories regarding the etiology only serve to demonstrate how much there is yet to be proved about this disease. Boeck[1] originally considered the disease to be a constitutional one, caused by a non-virulent form of tubercle bacillus. This opinion is still held by a large number of men. A comparatively high proportion of cases will later develop an active tuberculosis. Pinner believes that tuberculous lesions develop as a part of the sarcoid lesions and not as a separate disease concurrent with the sarcoidosis. Kyrle,[2] Wende,[3] and Goeckerman,[4] have demonstrated tubercle bacilli in early cases, and believe that if early lesions were examined more frequently the percentage in which tubercle bacilli are found would increase.

Others feel that it may be a nonspecific tissue response to various types of organisms, and perhaps to several organisms at the same time. In this connection, tubercle bacillus, leprosy bacillus, spirochaeta pallida, and Leishmania have been mentioned.

Pullinger,[5] Ross,[6] and others have advanced a hypothesis that it may be a disease of the reticulo-endothelial system, comparable to Hodgkin's disease.

Kissmeyer and Nielsen[7] believe that it is a chronic infectious granuloma. They advanced the theory that it may be due to a virus infection and that it is a specific pathologic entity.

PATHOLOGY

Histologically, the lesions resemble miliary tubercles. They are composed of epithelioid cells arranged in the form of miliary

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**South Dakota State Sanatorium.

tubercles. These collections of cells may attain large proportions. They are not as a rule outlined by an inflammatory area of lymphoid cells. There is frequently a giant cell of the Langhans' type present in the center. Histologically, they closely resemble the lesion that Sabin has been able to produce in guinea pigs by injection of the phosphatide fraction of the tubercle bacillus. Rubin and Pinner[9] report caseation in sarcoid lesions. In all the cases in which caseation was present, tubercle bacilli could be demonstrated in the lesion but not in the non-caseous lesion. The presence of a caseating lesion does not rule out the diagnosis of sarcoid.

BACTERIOLOGY

Pinner,[8] in 1938, summarized the positive bacteriological findings that have been reported in the literature. There were very few. They did not prove conclusively that sarcoid was due to any one specific organism. In 1944, Pinner[9] makes a statement that "failure to find tubercle bacillus in the majority of sarcoid lesions is not a convincing argument against their tuberculous etiology, and the presence of tubercle bacillus in some lesions is not a positive proof."

TUBERCULIN REACTION

In a great majority of cases there is a hyposensitivity to tuberculin or a complete anergy. In most cases after the development of clinical pulmonary tuberculosis, the tuberculin reaction becomes positive. Schaumann[10] in 1936 reported that a negative skin reaction would become positive after the healing of cutaneous lesions in sarcoid. The theory has been advanced that the lesion produced an anticutin that neutralizes the tuberculo-pyrine. Pinner,[11] in 1939, was unable to consistently demonstrate an anticutin that would account for the negative skin reaction.

CLINICAL FEATURES

This disease usually begins insidiously in early adult life, involving the skin, lymph nodes, bones, and lungs. It is extremely chronic. The clinical manifestations will depend on the structure that is involved.

Cutaneous Lesions—These usually consist of local areas of infiltration involving the skin of the cheeks, forehead, ears, arms, legs, fingers, toes, or back. They are usually of a dark red or brown color. The color is due to pigment deposit and not to increased vascularity. Pressure near the periphery of the lesion produces some blanching, but pressure in the center does not. Fusiform swellings of the fingers and toes are frequent, and there is usually an associated bone involvement.

Lymphadenopathy—In a large percentage of cases there is a

lymph gland involvement, which may be generalized or may be confined to one or two sets of glands. The involved glands are usually smooth, discrete and painless. Splenomegaly is frequent.

Pulmonary Lesions—Superficial, mediastinal, and peribronchial nodes are usually enlarged. Frequently the pulmonary involvement extends toward the bases, rather than towards the apices. Radiographically, the lungs show bilateral enlarged hilar glands. Atelectasis may be present as a result of compression by the hilar glands. There is usually interstitial fibrosis and multiple miliary foci resembling miliary tuberculosis.

Skeletal System—Small cysts are frequently found in the medullary portion of the bone. This involvement is most frequent in the bones of the fingers and toes. There is usually an area of decreased density in the bone with a surrounding area of increased density. These areas may be multiple and they may be very small.

Eye Lesions—In about ten per cent of the cases, involvement of the iris and ciliary body is present.

Parotid Glands—Enlargement of the parotid as the result of the presence of sarcoid has been reported. If iridocyclitis is present at the same time, a syndrome resembling uveoparotid fever is present.

Other Involvements—Lesions involving other organs as the kidney and spleen have been reported. In the kidney, the involvement is comparatively rare. In the spleen, it is quite frequently reported.

CASE HISTORY

I now wish to review a case that has been under my observation for several years.

This man was admitted to the sanatorium in December, 1942. At that time he was 33 years of age. He is white, has been married for ten years, and has two children that are living and well. His mother died of tuberculosis in 1916. Otherwise his family history is essentially negative. His past history is essentially negative.

This patient had a nocturia of several times a night for several years but did not consult a physician. There was no pyuria, dysuria, or hematuria. He was apparently in good health until the fall of 1941. There was a marked loss of weight that he could not account for at that time. During the winter he developed a dry hacking cough. In the spring he noticed that there was a definite loss of appetite. His cough, loss of weight and appetite persisted until the middle of the summer. A mild dyspnea developed. He lost 27 pounds. A tuberculin test at that time produced a negative reaction. He continued to work for approximately another month. At that time he had an attack of vomiting that was followed by nausea for several days. He had no previous gastro-intestinal symptoms that could have accounted for the vomiting. It did not seem to be associated with food and was not relieved by the usual alkali. He was advised to have his teeth examined and had one tooth extracted. Later there was another attack of vomiting and more teeth were extracted. The weight had dropped at this time from 217 pounds to 173. The sputum had gradually become productive of approximately an ounce of white,

logía o la bacteriología. La patología es muy semejante a la de la tuberculosis. Desde el punto de vista clínico la enfermedad se manifiesta con la invasión de casi cualquiera parte del cuerpo. Comunmente invade los ganglios, pulmones, piel y huesos. La enfermedad no es incompatible con la longevidad. Se presenta un caso de sarcoidosis en el que probablemente existe invasión del riñón. El paciente vive y trabaja moderadamente dos años después del diagnóstico y tres años después de la iniciación de los síntomas.

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The Chest X-Ray*

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Thousands and thousands of x-ray pictures of the chest pass before the eyes of induction station radiologists throughout the nation. The resultant satisfaction in discovering new cases of pulmonary pathology is certain to mean that the case finding method of the future is going to be that of mass x-ray. To add a little to our rapidly accumulating knowledge of this method and also to report on the expected occurrence of the unusual, a statistical study of 223,182 chest x-ray readings is presented here.

MATERIAL

The material for this study consisted mostly of chest x-rays of Selective Service registrants between the ages of 18 and 35. Some were up to 45 years of age and some were soldiers already in the Army, being rayed prior to discharge or overseas duty. The great majority were from the South. Of these 47.1 per cent were colored. The usual procedure consisted of a 4x5-inch stereoscopic film being taken. If any suspicious pathology was seen by the radiologist in

TABLE I—RESULTS

A SUMMARY OF THORACIC DEFECTS AS REVEALED BY X-RAY

Breakdown of Films According to Classification of Men

Selective Service registrants	212,904
Soldiers x-rayed prior to foreign service	3,984
Army recruits	2,318
Soldiers x-rayed prior to over-age discharge	1,943
Volunteer officer candidates	1,063
Enlisted reserve corps men returned to duty	555
Miscellaneous films made of soldiers	415
Total number of x-ray films in summary	223,182

Breakdown of Films According to Race of Men X-rayed

White	118,024
Colored	105,158

*The writer wishes to thank Lieut. Col. James H. Fox, Chief Medical Examiner, and his staff for their assistance in the preparation of this paper. Special appreciation is acknowledged to Majors N. C. House and J. H. King; and to Captains W. H. Angerman, M. B. Brown, and J. W. Straughn, who conducted the clinical examination of the chest; also to the Naval Medical Officers Lieuts. J. R. Pearson and R. W. Merrill.

these small films, a 14x17-inch negative was obtained before a final decision was made. The 14x17-inch films were reviewed by a conference consisting of the radiologist, two or more internists and recently a naval medical officer. Impressions were based chiefly on the interpretation of the x-ray films. However, whenever necessary, the individual was rechecked by the internist and the clinical history and findings were taken into consideration. The urgency of rapidly accumulating an Army and Navy did not always permit extensive and lengthy laboratory and other diagnostic procedures to be performed on the obviously rejected selectee.

PERMANENT REJECTIONS

Reason for Rejection	*White*		*Colored*		*Total*	
	No.	*Pct.*	*No.*	*Pct.*	*No.*	*Pct.*
Active tuberculosis	317	.2686	416	.3956	733	.3284
Healed tuberculosis, more than minimal	183	.1550	111	.1055	294	.1317
Pleurisy, severe	57	.0482	164	.1560	221	.0990
Pneumonitis, severe	76	.0644	83	.0789	159	.0712
Spinal deformity	23	.0195	33	.0314	56	.0251
Passive congestion with enlarged heart	10	.0085	10	.0095	20	.0089
Marked cardiac hypertrophy	32	.0271	63	.0599	95	.0425
Bronchiectasis, proven	4	.0034	0	.0000	4	.0018
Pulmonary tumor	8	.0068	11	.0105	19	.0085
Post-lobectomy, with extensive fibrosis	2	.0017	0	.0000	2	.0009
Pneumothorax, simplex	17	.0144	11	.0105	28	.0125
Aneurysm or aortitis	6	.0050	45	.0427	51	.0229
Unclassified pulmonary pathology	11	.0093	4	.0038	15	.0067
Gunshot wounds of chest	4	.0034	5	.0048	9	.0040
Tumor of diaphragm	0	.0000	3	.0029	3	.0013
Tumor of mediastinum	2	.0017	2	.0019	4	.0018
Acquired dextrocardia, severe	2	.0017	0	.0000	2	.0009
Atelectasis	2	.0017	1	.0010	3	.0013
Severe deformity of chest wall	2	.0017	2	.0019	4	.0018
Lung abscess	2	.0017	2	.0019	4	.0018
Pulmonary fibrosis	11	.0093	16	.0152	27	.0121
Post-thoracoplasty	3	.0025	0	.0000	3	.0013
Cardiac distortion	1	.0008	2	.0019	3	.0013
Coarctation of aorta	1	.0008	0	.0000	1	.0004
Patent ductus arteriosus	0	.0000	1	.0010	1	.0004
Cystic disease of lungs	1	.0008	5	.0048	6	.0027
Emphysema, severe	5	.0042	5	.0048	10	.0045

PERMANENT REJECTIONS *(Continued)*

Reason for Rejection	White No.	White Pct.	Colored No.	Colored Pct.	Total No.	Total Pct.
Subdiaphragmatic abscess or tumor	1	.0008	1	.0010	2	.0009
Paralysis of diaphragm	1	.0008	1	.0010	2	.0009
Pleural tumor	0	.0000	1	.0010	1	.0004
Scapula deformity, severe	0	.0000	3	.0029	3	.0013
Diaphragmatic hernia, verified	4	.0034	2	.0019	6	.0027
Knife wound of chest	0	.0000	1	.0010	1	.0004
Boeck's sarcoid	1	.0008	0	.0000	1	.0004
Tumor of rib	2	.0017	4	.0038	6	.0027
Hydro-pneumothorax	0	.0000	1	.0010	1	.0004
Post-traumatic deformity	1	.0008	0	.0000	1	.0004
Total rejections	791	.6701	1010	.9604	1801	.7970

TEMPORARY REJECTIONS

Reason for Rejection	White No.	White Pct.	Colored No.	Colored Pct.	Total No.	Total Pct.
Borderline tuberculosis	142	.1203	129	.1227	271	.1214
Pneumonitis, mild to moderate	95	.0804	84	.0798	179	.0802
Pleurisy, moderate	10	.0085	11	.0105	21	.0094
Increased markings, moderate to severe	8	.0067	2	.0019	10	.0045
Childhood tuberculosis, active	0	.0000	6	.0057	6	.0026
Post-lobectomy	1	.0008	0	.0000	1	.0004
Rib fracture	1	.0008	0	.0000	1	.0004
Pulmonary cyst	1	.0008	0	.0000	1	.0004
Hilar gland enlargement	3	.0025	2	.0019	5	.0022
Total rejections	261	.2211	234	.2225	495	.2218

SUMMARY OF CONGENITAL RIB ABNORMALITIES NOTED, NOT DISQUALIFYING

Cervical ribs (Note: One of these a cervical rib attached to the third cervical spine)	200	252	452
Rudimentary first ribs (Note: One of these a rudimentary *third* rib)	117	54	171
Bifid ribs	257	328	585
Joined ribs	118	63	181
Broadened ribs	93	58	151
Miscellaneous congenital rib abnormalities	30	22	52
	815 .6905	777 .7500	1592 .7133

SUMMARY OF READINGS NOTED, NOT DISQUALIFYING

Readings Noted	*White*	*Colored*	*Total*
Healed minimal tuberculosis	209	121	330
Healed childhood tuberculosis, pronounced	103	55	158
Pleurisy, mild	345	375	720
Increased hilar markings	151	127	278
Enlarged heart, mild	52	115	167
Shotgun pellets in chest	56	184	240
Spinal deformities, moderate	99	117	216
Rib fractures, with callus	25	15	40
Rib resection, old, well healed	47	12	59
Azygos lobe, pronounced	9	6	15
Deformity of clavicle	10	3	13
Dextrocardia (situs inversus)	18	15	33*

Note: One additional dextrocardia disqualified for active tuberculosis. One additional dextrocardia disqualified for bronchiectasis. One additional dextrocardia disqualified for enlarged heart.

*Includes one case true dextrocardia without situs inversus.

Dextrocardia, acquired	3	0	3
Absence of pectoralis major muscle	0	3	3
Emphysema, moderate	1	2	3
Deformity of scapula, congenital	1	0	1
Hypertrophied nipples	0	1	1
Excentric position of great vessels, marked	2	1	3
Calcium deposits in aorta, marked	0	1	1
Foreign bodies in chest wall	2	5	7

COMMENT

In comment, a few of the interesting observations are noted. *Tuberculosis:* The incidence of disabling chest diseases, both of a permanent and temporary nature was 1.018 per cent, while the incidence of active tuberculosis was 0.3284 per cent. Known cases of active pulmonary tuberculosis are placed in IV-F by the local draft boards and are not sent to the induction station for examination. Most of the cases discovered by the x-ray in this series had very few or no symptoms, and many were early and treatable. The prognosis, as illustrated in the following chart, as a whole, was fairly good.*

*This method of denoting x-ray findings—each lung considered—was suggested by Dr. David Salkin, Hopemont Sanitarium, Hopemont, West Virginia, 1936.

PROGNOSIS OF 1004 CASES

	No.	Pct.
Minimal	505	50.3
Moderately advanced	227	22.6
Far advanced	272	27.1

Borderline	271 cases		
Min/O	234 cases		
Min/Min	77 cases		
Ma/O	134 cases		
Fa/O	71 cases	Good prognosis	77.4%
Ma/Min	16 cases		
Fa/Min	22 cases	Fair prognosis	3.8%
Ma/Ma	41 cases		
Fa/Ma	37 cases		
Fa/Fa	101 cases	Poor prognosis	17.9%

This chart shows the amount of active disease in each lung. Unilateral cases and those bilateral of not more than minimal involvement in each lung (Min/Min) are considered "good prognosis." "Mostly unilateral" cases (Ma/Min, Fa/Min) are considered "fair prognosis." The remainder (17.82%) have a "poor prognosis."

The headquarters of the Mississippi State Selective Service requests the local boards to send all chest rejects from Mississippi to the State Sanatorium where Dr. Henry Boswell and staff serve as the Medical Advisory Board on chest diseases. Several hundred tuber-

Fig. 1 *Fig. 2*

Fig. 1—Dextrocardia, situs inversus and apical tuberculosis. *Fig. 2*—Dextrocardia (acquired). Heart shift due to bulging of anterior right chest.

culosis rejects have become patients and have been given treatment at the sanatorium. Others whose disabilities are temporary or indefinite have been sent back to induction station for reconsideration. Numerous other chest rejects have been returned to their homes for treatment and observation. Complete follow-up is made on all contacts of those with active tuberculosis by the county health officers.

Our statistics include a group of soldiers who were x-rayed prior to being discharged for dependency or over-age. Eight out of every

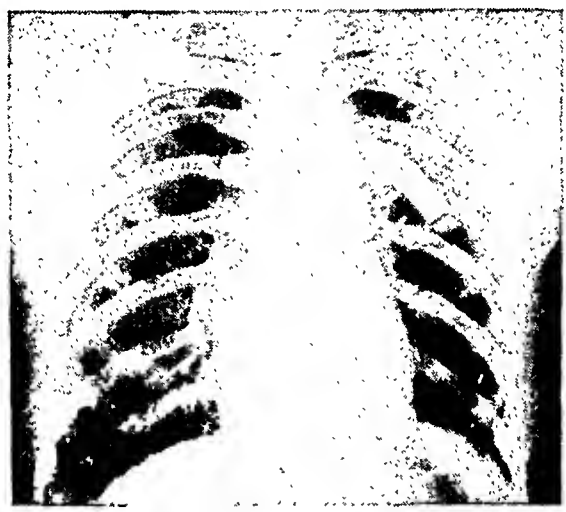

Fig. 3—Knife blade in lung. History of stab wound of chest five years ago. Was not aware that blade was in chest.

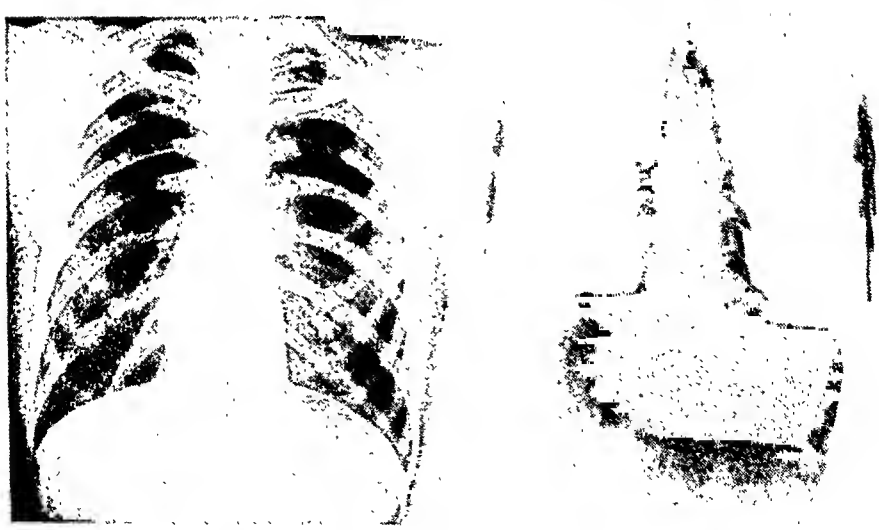

Fig. 4a *Fig. 4b*

Figs. 4a and 4b—Hiatus hernia of stomach.

thousand (0.8%) were found to have a disabling chest disease. All of these found to be unfit for military service because of x-ray findings either had no symptoms or their symptoms were not sufficiently alarming to cause an investigation by their regimental medical officers. Routine x-rays of chest were not being made when these soldiers entered the army (National Guard and early pre-war Selective Service). Many of these defects would certainly have been discovered at time of induction had x-rays been made.

Fig. 5a *Fig. 5b*

Figs. 5a and 5b—Left diaphragmatic hernia.

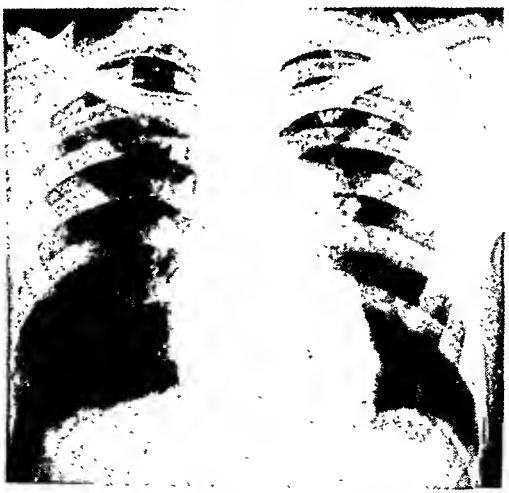

Fig. 6—Congenital heart disease (patent ductus). High pitched systolic murmur and thrill in the second left intercostal space.

In a group of registrants who completed their physical examination and were sent home before the x-ray was read, it was found that only 12.7 per cent of all those with rejectable chest diseases showed significant physical signs. This suggests that only approximately thirteen out of every one hundred chest pathologies would be discovered on a physical examination alone. What is more sig-

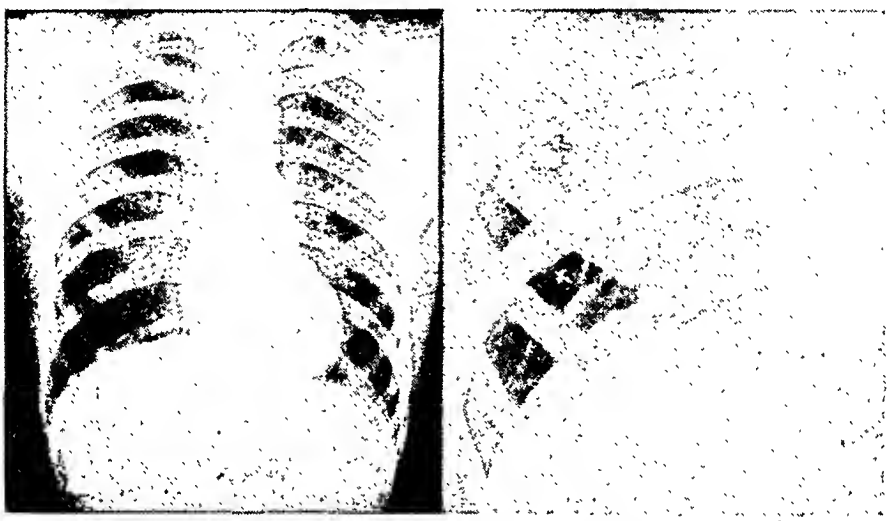

Fig. 7a *Fig. 7b*

Figs. 7a and 7b—Coarctation of the aorta. Loud arotic murmur. Blood pressure in upper extremity: 170/90, lower: 100/80.

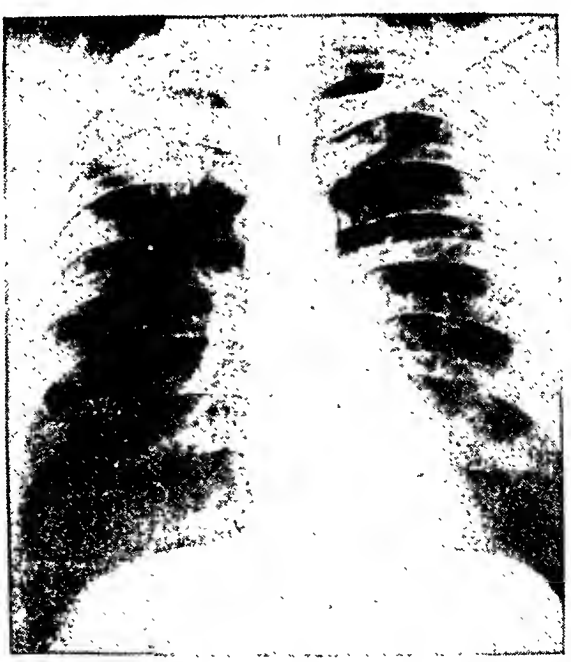

Fig. 8—Tumor of first rib on right. Asymptomatic.

nificant, only fourteen out of every one hundred cases of *active tuberculosis* as demonstrated by the roentgenogram could have been suspected from physical examination alone.

Healed Tuberculosis—No account was made of the incidence of minor calcium deposits in the entire series, but a check was made of 5000 plates chosen at random with this in mind. Thirty-eight per cent showed enough evidence to make the roentgenological diagnosis of healed primary tuberculosis. Only the more pronounced films suggestive of "healed childhood tuberculosis" were carried on the statistics under this category.

The impression of "healed tuberculosis, more than minimal; disqualifying" and "healed minimal tuberculosis; acceptable," depend chiefly on the number and size of calcium deposits or stable areas of fibrosis. However, the judgment of the internist and radiologist, taking into consideration the age and symptomatology, determines whether those cases of "military tuberculosis" are accepted or rejected. It is felt that most of these represent healed primary complexes.

Dextrocardia—There were 36 cases of true dextrocardia, an incidence of 0.016 per cent or 1 case out of every 6200 persons. A barium meal was given to all and a single flat plate of the abdomen taken. All but one had a situs inversus.

Four of these dextrocardias had accompanying disqualifying chest defects. The remainder were acceptable as far as the chest was concerned. One was disqualified for cardiac hypertrophy and passive congestion. One had minimal apical tuberculosis. Another had basal infiltration with a history suggestive of congenital bronchiectasis. The fourth had a slight cardiac enlargement and clinically gave signs of aortic stenosis.

About one third of these individuals had no previous knowledge of the abnormal location of their hearts.

Some cases were justifiably missed by the internist on his examination and at least three cases could not be definitely diagnosed by clinical findings unless the examiner used a great deal of imagination plus a strong suspicion of mal-position.

Minor shifts of the heart were noted frequently. The most common cause for heart shifting was slight deformity of the chest wall or spine, which often was not apparent on viewing the flat plate of the chest. Major shifts to the right (acquired dextrocardia) occurred five times. One was caused by atrophy of right side of chest following an attack of infantile paralysis. Two were caused by bulges in the chest wall. The others were caused by thickened pleura and atelectasis.

Congenital Rib Anomalies—The percent incidence of rib abnormalities is 0.7133 per cent. This means 1 out of every 140 have a

Figure 9—TUBERCULOSIS

A. Active Childhood—History of recent continuous contact with active tuberculosis. *B. Active Military*—Loss of weight, fever and cough. *C. Active Adult*—He didn't know that he had tuberculosis.

congenital rib defect. There were 452 cases of cervical ribs. None of these were found to have any symptoms that people with cervical ribs are supposed to have. The incidence of rib defects in those with disqualifying lung diseases was 0.7156 as compared with 0.7133 per cent of the total. This does not support the theory that rib abnormalities predispose to lung disease. Spine pictures were not taken routinely on these cases but some of the rib deformities were associated with congenital spine defects.

A rudimentary third rib, an apparent absence of a second rib, and a case of a cervical rib of the 3rd cervical spine are among the unusual findings.

Simulated Pulmonary Pathology—The following conditions were noted that could be mistaken for disease of the lung, especially if the x-ray alone was considered: Cervical ribs; spurs on ribs; rib tumors; rib cysts; holes in ribs resulting from an old rib resection; rib calluses; calcified deposits in pleura; foreign body in chest; pieces of wearing apparel (buttons, suspender buckles, etc.); hypertrophied nipples; unilateral hypertrophy of breasts; absence of pectoralis muscle (unilateral); fibroma on skin of chest; azygos lobe; eccentric positions of great vessels; inequalities in chest musculature due to atrophy of muscle groups; island ossification of rib cartilage; floating ribs with apparently no visible sternal attachments; diaphragmatic hernia; neck muscle shadows.

Unusual Observations—It was noted that many cases of apical infiltration, diagnosed radiologically as active tuberculosis, returned to the station in three to six months with complete clearing. Some of these were merely patches of apical pneumonia while others probably represented spontaneous healing of minimal tuberculosis.

Calcification of the pleura seemed to be rather frequent. In 159 cases of disqualifying severe pleurisy, 31 had calcium deposits in the pleura.

Six cases of diaphragmatic hernia were found—all proven by barium meal. Five were on the usual left side. One was right sided and was discovered by the follow-up study at the State Sanatorium.

Pneumothorax simplex (pneumothorax with no apparent cause) occurred 28 times. Most of these had no symptoms whatever. One case was bilateral.

Considerable elevation of the diaphragm occurred many times, appearing with no apparent cause and with no symptoms. Spontaneous paralysis of the diaphragm was diagnosed twice. One of these had many deep cervical glands as the probable cause. The nature of these glands was not discovered. Fluoroscopy in the other case showed the considerably elevated diaphragm to move only a little although the movement was not paradoxical. The

Figure 10—TUMOR

A—Pulmonary.

B—Diaphragmatic.

history of birth injury with marked atrophy of the right upper extremity suggested cause for phrenic nerve damage.

Five cases had knife blade wounds of the chest with a portion of the blade still present. One was disqualified since the lateral view placed the blade in the lung itself. Four of the registrants were not aware that the blade was still in their chests. Only one had symptoms and that one complained of occasional vague pains in the left upper chest.

Shotgun pellets in the chest wall were numerous, occurring 240 times. Here again symptoms were few and far between, even in those few cases where the pellets appeared to be actually in the lung tissue.

A sewing needle was seen in the chest of one registrant who had no knowledge of how it got there. A triangular opacity was seen in the back of another man's chest. The only clue as to its identity was history of an auto accident five years before when registrant had been cut severely with flying glass. The opacity is probably due to the fact that some auto glass contains radiopaque metals.

SUMMARY

223,182 chest x-rays are reviewed. The incidence of disqualifying chest disease is about 1.0 per cent. The incidence of active tuberculosis is about 0.3 per cent, the majority of which are early and treatable, thus demonstrating once again that mass x-raying is a practical and excellent method of case-finding. It is very probable that universal x-ray surveys will be the method of choice employed by health departments and tuberculosis agencies in the future.

RESUMEN

Se repasa 223,182 radiografías torácicas, la mayor parte de las cuales son de individuos registrados en el Servicio Selectivo y el resto de soldados ya en el Ejército. La proporción de rechazos por enfermedad del pecho es del 1.0 por ciento, más o menos. La proporción de tuberculosis activa es de un 0.3 por ciento, la mayor parte de la cual es tuberculosis temprana y tratable, lo que demuestra una vez más que el tomar radiografías colectivas es un método práctico y excelente de descubrir casos. Es muy probable que los censos universales con los rayos X serán, en el futuro, el método de elección que emplearán los Departamentos de Sanidad y las instituciones tuberculosas.

Opinions contained in this article are those of the writer.

The Problem of Tuberculosis in the Average Community*

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Tuberculosis is one of the most widespread of the common infectious diseases. It accounts for from 5 to 10 per cent of all the deaths in the United States. In 1939, 61,609 persons died from tuberculosis, and, according to conservative figures, there are approximately 500,000 persons sick from tuberculosis in the United States at the present time. We know that there are approximately 95,000 hospital beds available for tuberculous patients; so that only one-fifth or one-sixth of the tuberculous patients have the advantage of hospitalization at any given time. The investment in the tuberculosis hospitals and institutions amounts to the enormous sum of $300,000,000, and the cost of hospitalizing the tuberculous patient in 1940 was over $80,000,000.

According to the National Tuberculosis Association, the economic loss to the family and community, plus the cost of care and treatment, amounts to $10,000 for each death from tuberculosis. The number of deaths from tuberculosis in your community multiplied by this figure will give the economic loss from tuberculosis during any year.

From this introduction you can readily see that this treacherous disease, tuberculosis, affects every man, woman and child in your community, from a medical, public health, or economic standpoint. Too many people think of tuberculosis as solely the problem of the tuberculosis hospital, but this is far from being true. Far too few people realize that while there has been no family history of tuberculosis, and although they live in a section that is relatively free from tuberculosis, individuals may come in contact with tuberculosis much more frequently than one would suppose. Probably one-half of the patients entering tuberculosis hospitals today give no family history or any definite known contact.

One may estimate the number of tuberculous patients in his community by multiplying the annual number of deaths from tubercu-

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losis by eight. To be sure, some of these individuals would not be aware of the fact that they have tuberculosis, due to lack of symptoms. These individuals could only be found in a survey which would include tuberculin testing and x-ray examinations of the chest. Some of these patients would be under the care of their private physicians. Others have not been diagnosed as tuberculous, because they have not presented themselves for a complete physical examination, thinking that their cough might be a "cigarette cough" or just due to a chronic bronchitis.

On July 1, 1938, as tuberculosis coordinator for Cincinnati and Hamilton County, I undertook the study of the problems of tuberculosis in that community. Shortly thereafter, three outstanding facts were made quite obvious:

First: That the problem of tuberculosis is not fully appreciated by either the medical profession or by the general public.

Second: That there was a serious lack of effective cooperation and coordination of all agencies dealing with the tuberculosis problem.

Third: That in order to bring this great public health problem under control, we would have to spend more money in order to save money five, ten, fifteen, and twenty years later.

I will venture to say that these same conditions exist today in every community where tuberculosis is not definitely under control.

During the 2½ years spent as tuberculosis coordinator, I studied the problems of tuberculosis by visiting practically every patient in his home before admission to the tuberculosis hospital, by working in close cooperation with the City and County Boards of Health, the Welfare Department, Chest and Pneumothorax Clinics, various other agencies, and the Tuberculosis Hospital.

and 55 per cent in the far-advanced stage. From this you see that 87 per cent of the patients are in the advanced stages.

A case of minimal tuberculosis would require six months or less hospitalization with practically 100 per cent cure, whereas moderately or far advanced cases require from two to six times that length of hospitalization. Cures in the latter groups are doubtful, and when they occur, the patients may be under a physical handicap the rest of their lives.

To further show the value and importance of early diagnosis, one needs only to study Hilleboe's article in *The American Review of Tuberculosis*, December, 1936, on "The Mortality of Discharged Tuberculous Patients from 1885 to 1935," to know what it means. From this study it was concluded that a person with minimal tuberculosis has a risk of dying increased approximately 4 times; one with moderately advanced, 16 times; one with far-advanced, 40 times over that of the person in the general population from which the patients were drawn.

Many communities like Cincinnati, and, no doubt, like Chattanooga, are greatly concerned about the number of people killed by automobiles, and there is hardly a day that the papers do not carry articles about this deplorable condition, but I will venture to say that few of these communities realize that approximately 4 times as many people die of tuberculosis every year as are killed by automobiles. Another rather startling fact has been called to the attention of the public in Cincinnati, and that is this: Approximately 675 persons died of tuberculosis during the past two years, while less than 35 persons died of such contagious diseases as cerebro-spinal meningitis, measles, typhoid fever, smallpox, scarlet fever, and diphtheria. This same ratio of deaths from tuberculosis and the contagious diseases mentioned above exists in many of the average communities today, without being realized or fully appreciated.

At this point it might be well to discuss the "Obstacles in the Control of Tuberculosis" as it applies in the average community. According to Dr. H. I. Spector of St. Louis, Missouri, in *The Bulletin of the National Tuberculosis Association*, February, 1939, the following may be cited:

First: The most important handicap in the eradication of tuberculosis is a shortage of hospital beds. Any attempt to control the dissemination of tuberculosis will prove ineffective as long as the unhospitalized patient continues to spread the disease. A ratio of two beds per annual death is only a safe minimum for any community.

Second: The second obstacle is late diagnosis. Limited budgets have held up continuous case-finding activities.

Third: The third obstacle is the low financial status of the patient in numberless instances, and his unwillingness to stop work.

Fourth: The inability to recognize the disease in the early stage on the part of the general practitioner seriously retards tuberculosis eradication.

Fifth: The high incidence of the disease among workers exposed to dust with a high silica content.

Sixth: A very important deficiency in our present control consists of our failure to rehabilitate the arrested case economically.

Nothing can be added to this as it applies to the average community except to say that the whole problem may be summarized in one brief sentence—*a lack of sufficient money to do a good job.*

Knowing this to be true, what can be done to improve conditions? The four major activities in any campaign against tuberculosis are Education, Diagnosis, Treatment, and Rehabilitation, each of which will be discussed separately.

EDUCATION

1) The public must be constantly and increasingly educated as to the danger and contagiousness of tuberculosis, so that the average person will seek medical attention at the onset of the symptoms and not wait until the disease has reached the moderately or far-advanced stages.

2) Public Officials need to be educated to the fact that quicker and better relief is essential to families where the bread-winner is the unfortunate victim of tuberculosis. Patients cannot successfully take the "cure" if they are worried about their families not getting enough to eat.

3) The public and the private physician need to be educated as to the available facilities as offered by local hospital clinics, the Board of Health and the local Tuberculosis and Health Associations where the indigent patient may have sputum examinations and x-rays at little or no cost, to assist the physician in making early and accurate diagnoses of tuberculosis.

4) The physicians should be educated to the necessity of reporting all cases of tuberculosis to the Board of Health as soon as the diagnosis is established. From this and other information, each community will have on record a true picture of its local tuberculosis problem.

DIAGNOSIS AND TREATMENT

Both of these are pretty well established. However, we should all strive for earlier diagnoses and immediate hospitalization when possible, unless the patient can be adequately taken care of at home by a physician who thoroughly understands tuberculosis. Early

diagnoses would save a great deal of time, money and lives. Dr. Henry Vaughan of Detroit, Michigan, has estimated that the finding of a case of tuberculosis in the minimal stage of the disease is a saving to the community of a thousand dollars.

REHABILITATION

This, along with education, has been sadly neglected. Dr. C. J. McIntyr in *The Bulletin of the National Tuberculosis Association*, August, 1938, states that the after care or rehabilitation of the tuberculous patient is an almost untouched field, and cites the fact that less than 1,000 patients are rehabilitated from the 125,000 patients discharged from institutions yearly. It has paid to rehabilitate the deaf and blind, so why not the discharged tuberculous patient?

The weakest link in the anti-tuberculosis campaign is the rehabilitation of the tuberculous patient. On this question, our facilities are shamefully inadequate. The discharged patient does not receive the necessary guidance and support from the social agencies of many communities to safeguard him from a future breakdown. The result is that from 15 to 65 per cent of all patients discharged from all tuberculosis hospitals and institutions have relapses. This certainly is false economy, as it is much cheaper to keep the discharged patient well than it is to pay the cost of rehospitalization. *A job half done when dealing with public health and human lives, regardless of how good the intentions, can only lead to criticism for its incompleteness.* Anyone who has it within his power to help correct these conditions and fails to do so, commits a serious offense against society. They are every bit as guilty as the patient who refuses hospitalization and continues to be a public health menace, or the doctor who does not make a complete examination and treats an open-active case of tuberculosis as a common cold.

There is too large a gap between what is *known* about tuberculosis and what is *done* about tuberculosis. The closer these two conditions can be brought together, the nearer will be the approach in bringing tuberculosis under control or in eliminating it from our cities, our counties and our states. Failure on the part of the cities, counties or states to accept this responsibility is not fair to neighboring communities that have a better tuberculosis control program, for so often the tuberculous patient migrates there, hoping to get medical attention. On the contrary, these unfortunate individuals meet with bitter disappointment and often become stranded away from home, friends, and relatives.

Many communities know that they have a tuberculosis problem and about once a year do a little talking about it, but I can assure

you that if a careful study of the whole problem is not made so that you have a true picture, little or nothing constructive or permanent will be accomplished in bringing this great public health problem under control.

The Anti-Tuberculosis League might well take the initiative, as they did in Cincinnati, by studying the tuberculosis program, compiling the statistics, and presenting its findings to the public and to the local health authorities, so that a definite plan of attack may be formulated to get the quickest and best results from the money available, and to further stimulate public interest, to see that once the plan is undertaken, it will be carried on to a satisfactory completion.

As I have previously mentioned, the position of tuberculosis coordinator of Cincinnati and Hamilton County was sponsored and supported by the Anti-Tuberculosis League. The coordinator presented information about tuberculosis to a coordinating committee, composed of representatives of every leading organization interested in the control of tuberculosis. As a result, many worthwhile things have been accomplished. For instance:

1) Quicker and better relief to tuberculous families by the Welfare Department.

2) Better housing to the tuberculous families; reduction of overcrowding among indigent families; and slum clearance through the efforts of the Welfare Department and Better Housing League.

3) Better and more effective cooperation and coordination of all social, welfare, and health agencies.

4) Additional money every month from Cincinnati's Finance Committee of City Council to help tuberculous families.

5) Additional public health nurses in the Boards of Health to do tuberculosis follow-up work, and see that all contacts are examined promptly and regularly.

6) By working in close cooperation with the trustees of the Hamilton County Tuberculosis Hospital, a decision was reached whereby the Preventorium was closed, making available additional hospital beds; thus the waiting list of open-active cases for the Tuberculosis Hospital was eliminated. This also relieved the tuberculosis situation at the Cincinnati General Hospital.

7) By working with the local Boards of Health and the Ohio State Health Department in getting incorrigible open-active cases of tuberculosis that constituted a public health menace quarantined.

8) After demonstrating the value of the tuberculosis coordinator, this position has now been taken over by the Hamilton County Tuberculosis Hospital, and it will be a part of his duties to see that every discharged tuberculous patient returns to his private physician or clinic for check-ups and reexaminations.

With the closing of the Preventorium, the Anti-Tuberculosis League employed a well-trained pediatrician as pediatric coordinator to conduct children's chest clinics and coordinate the work of all children exposed to tuberculosis.

In addition, the Anti-Tuberculosis League conducts eleven Negro and two white Health Clubs with meetings every month, at which time health topics are discussed and movies about tuberculosis are shown.

The League finances two night chest clinics every week at the Health Center. There contacts in the lower economic group who find it impossible to report to the day chest clinics can be examined.

The League conducts two Health Camps every summer for a period of ten weeks, one for white and one for colored children who have been in contact with an open-active case of tuberculosis during the past two years. This is in order to build up their resistance and to try to prevent the development of tuberculosis.

From time to time the Anti-Tuberculosis League conducts tuberculin testing programs in the various school groups, conducts case-finding surveys, and sponsors refresher courses for nurses.

This organization also conducts a well-organized, continuous educational program about tuberculosis through the press, through lectures to Parent-Teacher Associations, through neighborhood meetings, clubs, and churches. Lectures are also given in the various schools, with distribution of suitable literature about tuberculosis. Movies about tuberculosis are also shown whenever possible.

Such a program as outlined was made possible through the sale of Christmas Seals and supplemental assistance from the Community Chest.

After carefully studying the problems of tuberculosis in Cincinnati and Hamilton County, I believe that 85 to 90 per cent of the blame can be placed on the patients for our local situation, while 10 to 15 per cent is due to all other agencies. This probably holds true in any average community. Any indifference on the part of the patients, some physicians, the hospitals and the various organizations, to accept their full responsibility pertaining to tuberculosis determines whether or not a community can have a good tuberculosis control program.

Knowing the problems of tuberculosis in the City of Cincinnati, with its death rate of approximately 77 per 100,000 of population, I can appreciate the magnitude of the tuberculosis problem in the state of Tennessee which has a death rate from tuberculosis of approximately the same figure. I see a shining ray, as reported in the April *Bulletin of the National Tuberculosis Association*, that "The 1941 legislature in Tennessee was extremely health-conscious in appropriating $100,000 to the state department of health per

annum; $190,000 per annum to establish and help finance county health department, and $500,000 for the establishment of a tuberculosis hospital." You should urge the legislature to keep up the good work.

During 1940, the people of the United States spent:

$ 56,721,746 for chewing gum
134,525,233 for cigars and cigarettes
282,002,617 for ice cream

Certainly if the public can afford to spend nearly half a billion dollars on these three items during a year, I feel the public would gladly contribute to the support of a program of tuberculosis prevention and control if and when the public is sufficiently educated to the public health aspects of tuberculosis.

Tuberculosis can be eradicated. However, it calls for a sizeable expenditure and herein lies our greatest handicap. Money spent in the fight against tuberculosis today helps to protect your home against tuberculosis, and will save the taxpayers large sums of money in the future by reducing the incidence of the disease, the number of patients requiring hospitalization, and the number of families on relief as this great public health problem is brought under control.

Dr. Louis I. Dublin very forcibly called this matter to the attention of all those present in his address at the annual meeting of the American Public Health Association in Detroit, Michigan, on October 9, 1940, when he stated: "It is estimated that in the two years, 1937-1939, when the Detroit City Council was backing the Health Department with $400,000 in the tuberculosis case-finding program, more than $1,300,000 was saved to the City of Detroit in potential hospital bills by discovering and treating cases in their early stages and through the prevention, by this means, of additional cases."

To be sure, a great deal of progress has been made in tuberculosis control. A few facts to refresh one's memory:

In 1900, there were 202 deaths from tuberculosis in the United States per 100,000 of population.

In 1940, this has dropped to approximately 46 deaths per 100,000 of population.

In 1920, tuberculosis ranked first in the causes of death in the United States.

In 1940, tuberculosis ranked eighth in the causes of death in the United States. However, we should not be lulled into a sense of false security, as one needs only to be reminded of the facts that:

1) Tuberculosis still ranks first in the causes of death between the ages of 15 and 45 years of age, and,

2) One death in every four in young women between the ages of

20 and 30 years is due to tuberculosis.

Education with regulation, if necessary, offers our best approach in tuberculosis control, but the best weapon in the world is ineffective unless it is used. Indifference, not opposition, is the greatest enemy of progress.

We must look to the Federal Government, our state, county, and municipal authorities for correction of our present situation, and improvement will come largely through the influence exerted by public opinion. There is no better way to mold public opinion than through a well-organized and well-directed educational program sponsored by the Tuberculosis and Medical Societies.

A great deal has been said and written about various things and conditions which affect National Defense. There can be no doubt about the role of tuberculosis in this program, as approximately 35,000 young people between the ages of 15 and 45 years die every year from this great scourge. National defense and security depends to a large degree upon national health; therefore, it becomes a patriotic duty as well as a civic and public health duty to lend our efforts toward its control.

It should, without any question, be the duty of everyone in the State of Tennessee to support such a program to bring the great public health menace, tuberculosis, under control, and results will be in direct proportion to your efforts and the amount of money made available to do a real job.

SUMMARY

Tuberculosis affects every man, woman and child in the community from a medical, public health, or economic standpoint.

It is very probable that the following conditions exist today in any community where tuberculosis is not definitely under control:

1) The problem of tuberculosis is not fully appreciated by either the medical profession or the general public.

2) There is a serious lack of effective cooperation and coordination of all agencies dealing with this problem.

3) To bring tuberculosis under control, more money must be spent now in order to save money in later years.

According to Dr. H. I. Spector, some of the obstacles in the control of tuberculosis are:

1) A shortage of hospital beds.

2) Late diagnosis.

3) The low financial status of the patient in numberless instances and his unwillingness to stop work.

4) The inability on the part of the general practitioner to recognize the disease in its early stage.

5) Our failure to rehabilitate the arrested case economically.

The four major activities in any campaign against tuberculosis are: Education, Diagnosis, Treatment and Rehabilitation.

The public must be constantly and increasingly educated as to the dangers and contagiousness of tuberculosis. Physicians and public officials must be educated as to the part they can play in the control of the disease.

We should strive for earlier diagnoses and immediate hospitalization.

Rehabilitation, along with education, has been sadly neglected. On this question, our facilities are shamefully inadequate.

Tuberculosis can be eradicated. However, it calls for a sizeable expenditure and herein lies our greatest handicap.

Education with regulation, if necessary, offers our best approach in tuberculosis control. Indifference, not opposition, is the greatest enemy of progress.

RESUMEN

La tuberculosis afecta a cada hombre, mujer y niño en la comunidad desde los puntos de vista médico, sanitario o económico.

Es muy probable que existan hoy las siguientes condiciones en cualquiera comunidad en la que la tuberculosis no esté definitivamente dominada:

1) Ni la profesión médica, ni el público en general comprenden del todo el problema de la tuberculosis.

2) Existe una seria falta de cooperación y coordinación efectivas entre las diferentes instituciones que tienen que ver con este problema.

3) Para dominar la tuberculosis es necesario gastar más dinero ahora a fin de ahorrarlo en los años venideros.

De acuerdo con el Dr. H. I. Spector, algunos de los obstáculos en el control de la tuberculosis son:

1) La insuficiencia de camas en los hospitales.

2) El diagnóstico tardío.

3) La humilde condición económica del paciente en casos innumerables y su poca voluntad para dejar de trabajar.

4) La incapacidad de parte del médico general para reconocer la enfermedad en su período incipiente.

5) Nuestro fracaso en la rehabilitación económica del caso estacionado.

Las cuatro actividades principales en la lucha anti-tuberculosa son: Educación, Diagnóstico, Tratamiento y Rehabilitación.

Debe educarse al público constantemente y cada vez más acerca de los peligros y la contagiosidad de la tuberculosis. Precisa educar a los médicos y a las autoridades públicas acerca del papel que deben desempeñar en el control de la enfermedad.

Nos debemos esforzar por hacer diagnósticos tempranos y por conseguir la hospitalización inmediata.

La rehabilitación, junto con la educación, ha sido lastimosamente descuidada. Nuestras facilidades para remediar este mal son vergonzosamente inadecuadas.

La tuberculosis puede ser erradicada. Empero, ésto demanda un desembolso bastante grande, y ese es nuestro mayor obstáculo.

La educación, y si es necesaria, la reglamentación, nos ofrece la mejor manera de abordar el problema del control de la tuberculosis. La indiferencia, y no la oposición, es el mayor enemigo del progreso.

COLLEGE COMMITTEES*

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J. Winthrop Peabody, M.D., F.C.C.P., *Chairman*	Washington, D. C.
Charles M. Hendricks, M.D., F.C.C.P.	El Paso, Texas
Chevalier L. Jackson, M.D., F.C.C.P.	Philadelphia, Pa.
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Horace LoGrasso, M.D., F.C.C.P.	Perrysburg, New York

*The names of the members serving on other College councils and committees were published in the September-October, 1944 issue, *Diseases of the Chest.*

COLLEGE NEWS

SEMI-ANNUAL MEETING, BOARD OF REGENTS

The semi-annual meeting of the Board of Regents of the College was held in connection with the annual meeting of the Southern Chapter of the College at the DeSoto Hotel, St. Louis, Missouri, November 13, 1944, while this issue of the journal was on the press.

A number of College councils and committees made plans to meet at St. Louis, and the reports of these councils and committees will be published in an early issue of the journal.

COLLEGE CHAPTER NEWS

Southern Chapter

The annual meeting of the Southern Chapter of the College was held at St. Louis, November 13 and 14. A copy of the program was published in the last issue of the journal, and a complete report of the meeting will be published in the next issue of *Diseases of the Chest.*

Dr. Paul H. Ringer, F.C.C.P., Asheville, North Carolina, is the retiring president of the Southern Chapter of the College. The scientific program was prepared under the chairmanship of Dr. Paul A. Turner, F.C.C.P., Louisville, Kentucky. Dr. H. I. Spector, F.C.C.P., St. Louis, Missouri, was chairman of the Local Arrangements Committee.

Benjamin L. Brock, M.D., F.C.C.P.
Secretary-Treasurer,
Southern Chapter.

Rocky Mountain Chapter Organized

The Rocky Mountain Chapter of the American College of Chest Physicians was organized at a meeting held at the Cosmopolitan Hotel, Denver, Colorado, September 27, 1944, and the following officers were elected:

President, Colonel John B. Grow, F.C.C.P., Denver, Colorado.

First Vice-President, Carl H. Gellenthien, M.D., F.C.C.P., Valmora, New Mexico.

Second Vice-President, William C. Walker, M.D., F.C.C.P., Salt Lake City, Utah.

Secretary-Treasurer, W. Bernard Yegge, M.D., F.C.C.P., Denver, Colo.

Dr. Arnold Minnig, F.C.C.P., Denver, Colorado, Governor of the College for the State of Colorado, presided at the organization meeting, and Dr. G. Burton Gilbert, F.C.C.P., Colorado Springs, Colorado, Regent of the College for the district, was chairman of the Nominating Committee. Colonel H. P. Marvin, F.C.C.P., Denver, Colorado, and Dr. J. E. Harris, F.C.C.P., Albuquerque, New Mexico, were the other two members of the Nominating Committee.

Following the organization of the chapter, the meeting was addressed by Dr. Louis Mark, F.C.C.P., Columbus, Ohio, who spoke on "The Role of the Chest Specialist in the Control of Tuberculosis."

Colonel John B. Grow, F.C.C.P., was chairman of the Scientific Program Committee, and Dr. W. Bernard Yegge, F.C.C.P., was chairman of the Reception and Entertainment Committee. An excellent scientific program was presented, and 130 physicians registered for the meeting.

W. Bernard Yegge, M.D., F.C.C.P.
Secretary-Treasurer,
Rocky Mountain Chapter.

Wisconsin Chapter Organized

The Wisconsin Chapter of the College was organized at a meeting held in conjunction with the annual meeting of the Wisconsin State Medical Society, at the Schroeder Hotel, Milwaukee, September 17. The following officers were elected:

President, Alfred A. Busse, M.D., F.C.C.P., Jefferson.
Vice-President, Herbert H. Christensen, M.D., F.C.C.P., Wausau.
Secretary-Treasurer, Leon H. Hirsh, M.D., West Allis.

These names were presented by the Nominating Committee, comprised of Dr. Andrew L. Banyai, F.C.C.P., Wauwatosa, Chairman, Leonard W. Moody, M.D., F.C.C.P., Bayfield, and Bert L. Jones, M.D., F.C.C.P., Wood, and the candidates were unanimously elected to hold office for the ensuing year.

Dr. Carl O. Schaefer, F.C.C.P., Racine, presided at the meeting, and following the organization of the chapter, he introduced Dr. Jay Arthur Myers, F.C.C.P., Minneapolis, Minnesota, President of the College, who spoke on "The Medical Profession in the Control of Tuberculosis."

A large delegation of officials and other physicians from the Illinois Chapter attended the meeting and participated in the scientific program.

Leon H. Hirsh, M.D.
Secretary-Treasurer,
Wisconsin Chapter.

Pennsylvania Chapter

The annual meeting of the Pennsylvania Chapter of the College was held at Pittsburgh, September 19, 1944. The following officers were elected:

President, Ross K. Childerhose, M.D., F.C.C.P., Harrisburg.
Vice-President, Chevalier L. Jackson, M.D., F.C.C.P., Philadelphia.
*Secretary-Treasurer, Edward Lebovitz, M.D., F.C.C.P., Pittsburgh.

Dr. J. C. Placak, F.C.C.P., Cleveland, Ohio, Chairman of the Board of Regents of the College, was the guest of honor and addressed the annual dinner meeting of the chapter. This was followed by an x-ray conference.

Edward Lebovitz, M.D., F.C.C.P.
Secretary-Treasurer,
Pennsylvania Chapter.

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*Re-elected.

Michigan Chapter

The Michigan Chapter of the College met in conjunction with the annual meeting of the Michigan State Medical Society, at the Pantlind Hotel, Grand Rapids, Michigan, September 28. The meeting was addressed by Dr. Jay Arthur Myers, F.C.C.P., Minneapolis, Minnesota, President of the College.

A Symposium on Atypical Pneumonia (Diagnosis and Treatment) was presented by Dr. Norman Clarke, F.C.C.P., Detroit, and Dr. Oliver Marcotte, F.C.C.P., Detroit. These papers were concerned with a resumé of the status of the so-called virus pneumonia and its peculiarities as compared with the more commonly accepted type.

Dr. Herman E. Hilleboe, F.C.C.P., Washington, D. C., spoke before the general assembly of the state medical society.

William P. Chester, M.D., F.C.C.P.
Secretary-Treasurer,
Michigan Chapter.

Indiana Chapter

The Indiana Chapter of the American College of Chest Physicians held a luncheon meeting in conjunction with the Anti-Tuberculosis Committee of the Indiana State Medical Association at Indianapolis, Indiana, on October 3, 1944.

An interesting discussion of bronchial tumors, illustrated with bronchoscopic motion pictures showing bronchial tumors, was presented by Dr. Paul H. Holinger, F.C.C.P., Chicago, Illinois. This was followed by an x-ray conference.

At the business meeting a constitution was adopted and the following officers were elected for the ensuing year:

President, Philip H. Becker, M.D., F.C.C.P., Crown Point.
Vice-President, Edward W. Custer, M.D., F.C.C.P., South Bend.
*Secretary-Treasurer, Hubert B. Pirkle, M.D., F.C.C.P., Rockville.

About sixty members and guests attended the meeting.

Hubert B. Pirkle, M.D., F.C.C.P.
Secretary-Treasurer,
Indiana Chapter.

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*Re-elected.

Mexican Chapter

The First National Tuberculosis Congress of Mexico was assembled at Mexico City during the last week of July, under the auspices of the Ministry of Public Health and Welfare. Dr. Baz, Secretary of the Ministry, presided at the opening session of the Congress in behalf of the President of the Republic of Mexico.

A majority of the members of the Mexican Chapter of the College presented scientific papers at the Congress. Members of the College from the United States of America who participated in the Congress were Dr. George G. Ornstein, F.C.C.P., New York, N. Y., who read a paper on "Pathogenesis of Tuberculosis," and Dr. Leo Eloesser, F.C.C.P.,

San Francisco, California, who presided at several of the sessions and also made a number of speeches in Spanish.

A group of Cuban specialists, most of them members of the Cuban Chapter of the College, who attended the Congress, included:

Dr. Francisco J. Menendez, F.C.C.P.
Dr. Juan J. Castillo, F.C.C.P.
Dr. Modesto Arturo Manas.
Dr. Luis de la Cruz Munoz.
Dr. Hector Madariaga.
Dr. Pedro Domingo.

Dr. Aresky Amorim, F.C.C.P., Rio de Janeiro, Brazil, a member of the Brazilian Chapter of the College, attended the Congress, and he participated in the presentation of a medal and diploma from the Brazilian College of Surgeons to Dr. Donato G. Alarcon, F.C.C.P., Regent of the American College of Chest Physicians in Mexico.

Drs. Alarcon, Cosio Villegas, and Jiminez, officials of the College, received the Gold Medal from the Cuban Tuberculosis Council for outstanding work against tuberculosis.

This Congress which was sponsored by the Mexican Association for the Study of Tuberculosis, was attended by 400 physicians, of which nearly 100 were chest specialists. More than 100 papers on various phases of chest diseases were read at the Congress, and the society is to be congratulated upon the brilliant success of this meeting.

Peru Chapter Organized

The members of the American College of Chest Physicians in Peru met at the Peruvian Medical Association Headquarters at Lima on August 13, 1944, and founded the Peruvian Chapter of the American College of Chest Physicians. The following officers were elected:

President, Dr. Ovidio Garcia Rosell, F.C.C.P.
Vice-President, Dr. Juan Escudero Villar, F.C.C.P.
Secretary-Treasurer, Dr. Max Espinosa Galarza, F.C.C.P.
Treasurer, Dr. Luis G. Hubner, F.C.C.P.
Bibliothecary, Dr. Mario Pastor B., F.C.C.P.

In addition to the officers, the charter members of this chapter are:

Dr. Dagoberto E. Gonzalez, F.C.C.P.
Dr. Juan Macchiavello, F.C.C.P.
Dr. Leopoldo Molinari Balbuena, F.C.C.P.
Dr. Victor M. Tejada, F.C.C.P.
Dr. Ramon Vargas Machuca, F.C.C.P.
Dr. Juan A. Werner, F.C.C.P.
Dr. Horacio Cachay Diaz.
Dr. Roman del Castillo.
Dr. Flavio Guadalupe Guija
Dr. Angel Luis Morales.
Dr. Victor Narvaez Obezo
Dr. Humberto Valderrama Delgado.
Dr. Pedro Zevallos Alegre.

Cuban Chapter

The Cuban Chapter of the College announces that the Sixth Pan American Congress of Tuberculosis (ULAST) will meet at Havana, Cuba, January 15-21, 1945, under the presidency of Dr. Juan J. Castillo, F.C.C.P. This Congress is being sponsored by the Cuban Government and outstanding chest specialists from all of the Latin American countries have been invited to participate in this important conference.

The Fifth Pan American Congress was held at Buenos Aires, Argentina in 1940, and it was one of the most important events in the fight against tuberculosis held in this hemisphere. It is expected that a large delegation of members of the American College of Chest Physicians from many countries will meet at Havana in January, 1945. Dr. Jay Arthur Myers, F.C.C.P., President of the College, has received a special invitation to attend this Congress.

New Jersey Chapter

The New Jersey Chapter of the American College of Chest Physicians will meet at the Valley View Sanatorium, Paterson, New Jersey on Tuesday, November 21, 1944.

Dr. Edgar Mayer, F.C.C.P., New York City, will be the guest speaker. He will present a paper on "Pulmonary Emphysema."

The members of the Passaic County Medical Society will be guests of the Chapter.

Harold S. Hatch, M.D., F.C.C.P.
Secretary-Treasurer,
New Jersey Chapter.

New York State Chapter

The New York State Chapter of the College will hold its annual meeting at the Hotel Biltmore, New York City, on Thursday, February 1, 1945. The program for the meeting will appear in a later issue of the journal.

Dr. James H. Donnelly, F.C.C.P., Buffalo, President of the New York State Chapter, has appointed the following committees:

Nominating Committee:
George G. Wagner, M.D., F.C.C.P., Perrysburg, *Chairman.*
Major Swen L. Larson, F.C.C.P., New Rochelle.
George A. Lassman, M.D., F.C.C.P., New York City.

Membership Committee:
George F. Herben, M.D., F.C.C.P., Yonkers, *Chairman.*
Helen G. Walker, M.D., F.C.C.P., Buffalo.

Public Relations Committee:
Nelson W. Strohm, M.D., F.C.C.P., Buffalo, *Chairman.*
Harry Golembe, M.D., F.C.C.P., Liberty.
Edgar Mayer, M.D., F.C.C.P., New York City.

Program Committee:
Arthur Q. Penta, M.D., F.C.C.P., Schenectady, *Chairman.*
Donald R. McKay, M.D., F.C.C.P., Buffalo
George G. Ornstein, M.D., F.C.C.P., New York City.

Arthur Q. Penta, M.D., F.C.C.P.
Secretary-Treasurer,
New York State Chapter.

COLLEGE NEWS NOTES

College Fellows Participate in Meeting at J. C. R. S.

On September 25, 1944, a number of Fellows of the College who were in Denver, in connection with the meeting of the Rocky Mountain Chapter of the College participated in a scientific program held at the Jewish Consumptive Relief Society, Spivak, Colorado. Dr. Arthur Rest, F.C.C.P., Medical Director of the sanatorium read a paper on "The Role of the Roentgenogram in Tuberculosis Case Finding." This paper was discussed by Captain William Roper, M.C., Fitzsimons General Hospital, Denver; Dr. Richard Davison, F.C.C.P., Chicago, Illinois; Dr. Louis Mark, F.C.C.P., Columbus, Ohio; Dr. Karl Pfuetze, F.C.C.P., Cannon Falls, Minnesota; and Dr. Casper F. Hegner, Denver. The paper was demonstrated with x-ray films.

Dr. Louis Mark, F.C.C.P., Columbus, Ohio, the guest speaker of the evening, spoke on "Fads and Fancies in the Treatment of Tuberculosis."

Refreshments were served following the meeting.

Dr. Louis Mark, F.C.C.P., Columbus, Ohio, Regent of the College, read a paper before the meeting of the Mahoning County Medical Society, Canton, Ohio, on October 25. Dr. Mark spoke on "The Management of Pulmonary Disease."

Croix de Guerre to Lt. Col. Chester J. Mellies

Lt. Col. Chester J. Mellies, a Fellow of the American College of Chest Physicians, formerly of Mt. Vernon, Missouri, was recently decorated with the French Croix de Guerre and the Bronze Star for exceptional services rendered in collaboration with the French troops in Italy. Colonel Mellies who has been overseas for more than two years and has participated in the North African and Sicilian campaigns, served on the staff of the Missouri Tuberculosis Sanatorium in Mount Vernon, before entering the armed services.

DISEASES OF THE CHEST
SUBJECT INDEX
Volume X, January-December, 1944

A UNIQUE PALATABLE CALCIUM WAFER

Hoffman-La Roche, Inc., of Nutley, New Jersey, announces to the medical profession a new pleasant-tasting wafer for oral calcium therapy called LAROCAL WAFERS with Vitamins C. and D. This is not "just another" oral calcium preparation. *Larocal Wafers* contain a generous amount of calcium in the form of calcium arabonate—a readily-soluble, non-irritating, well-tolerated, and promptly-absorbed salt which is free from chalky taste. In addition, *Larocal Wafers* supply vitamins C and D in generous quantities—the latter for its important role in the absorption and utilization of calcium and the former for its part in the formation of dentine and bone matrix. These three ingredients—calcium arabonate, vitamin C and vitamin D—are incorporated into a candy-like wafer with a very pleasant taste—a taste so agreeable that not even squeamish patients, young or old, need to be coaxed to take *Larocal Wafers*. Like all Roche products, *Larocal Wafers* will be marketed only through professional channels and will never be advertised to the laity. *Larocal Wafers* are available in boxes of 30 and 100. A descriptive *Larocal Wafers* booklet will be furnished upon the request of the physician.

Readers Notice.

LIFE MEMBERSHIP

The Board of Regents of the American College of Chest Physicians adopted at the last annual meeting of the College held at Chicago, June 10-12, 1944, the following schedule of fees for life membership in the College:

"The minimum fee for life membership of members having attained the age of 59 years or over—$100.00.

58 years	$110.00	52 years	$170.00	45 years	$240.00
57 years	120.00	51 years	180.00	44 years	250.00
56 years	130.00	50 years	190.00	43 years	260.00
55 years	140.00	49 years	200.00	42 years	270.00
54 years	150.00	48 years	210.00	41 years	280.00
53 years	160.00	47 years	220.00	40 years	290.00
		46 years	230.00		

The above figures have been estimated on a 69 year life expectancy."

AMERICAN COLLEGE OF CHEST PHYSICIANS
500 North Dearborn Street
Chicago 10, Illinois

I hereby subscribe to Life Membership in the American College of Chest Physicians. According to the present plan, at my age the total Life Membership Fee is ($.....) ..... Dollars

My annual dues shall cease at once. I shall be entitled to the publications of the College, including the Directory and the journal, *Diseases of the Chest*, without further cost, for the balance of my life, and my membership shall be permanently active.

The principal of my subscription shall be added to the permanent Endowment Fund of the College.

Name.....

Address.....

City..... Zone No..... State.....

Date of Birth..... Date of Subscription.....

DISEASES *of the* CHEST

OFFICIAL PUBLICATION

OF THE

AMERICAN COLLEGE OF CHEST PHYSICIANS

EXECUTIVE OFFICE
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Murray Kornfeld, *Managing Editor*

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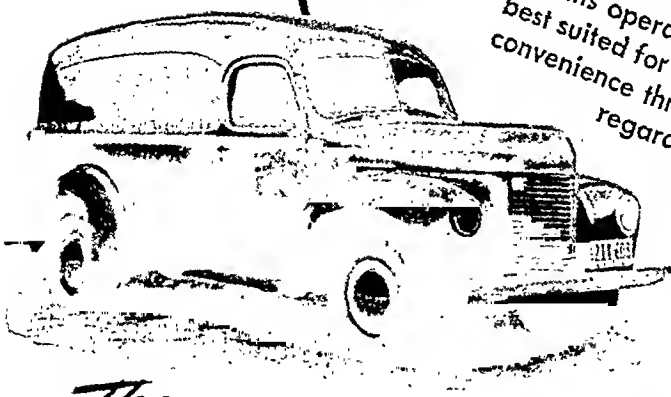

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The
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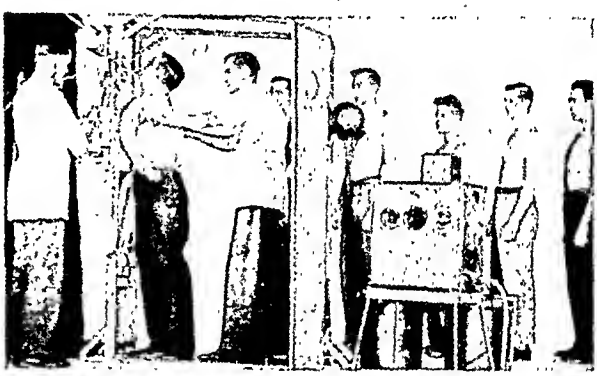

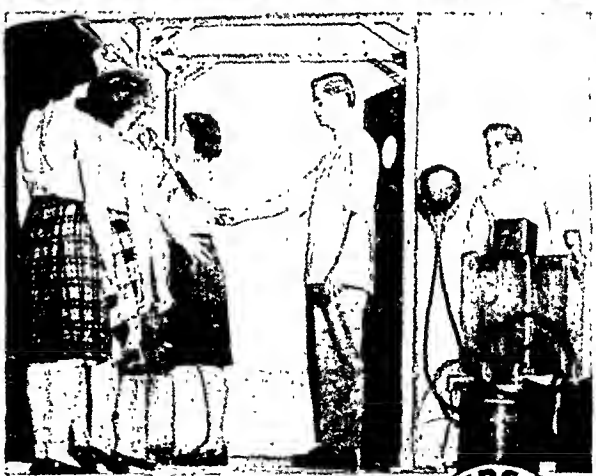

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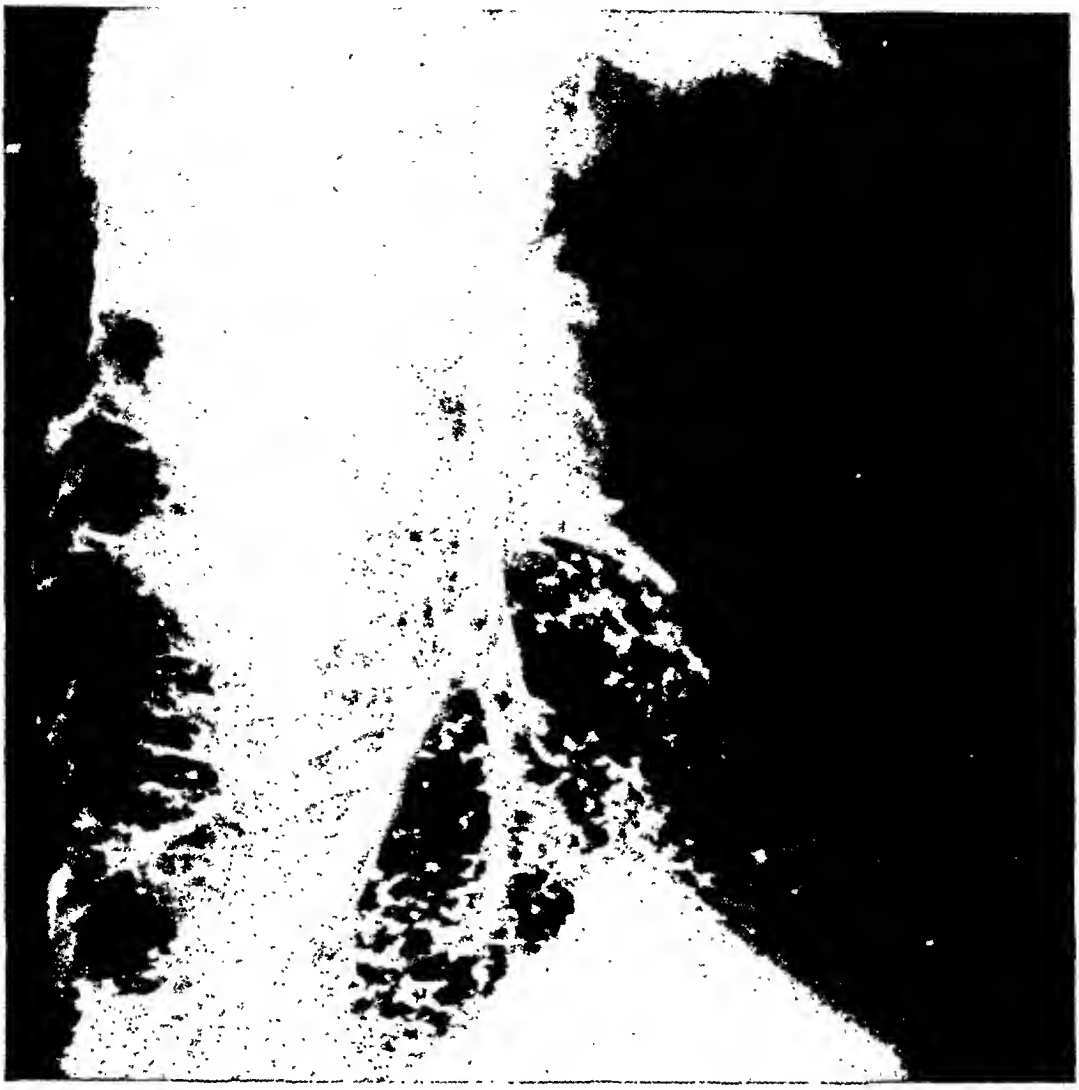

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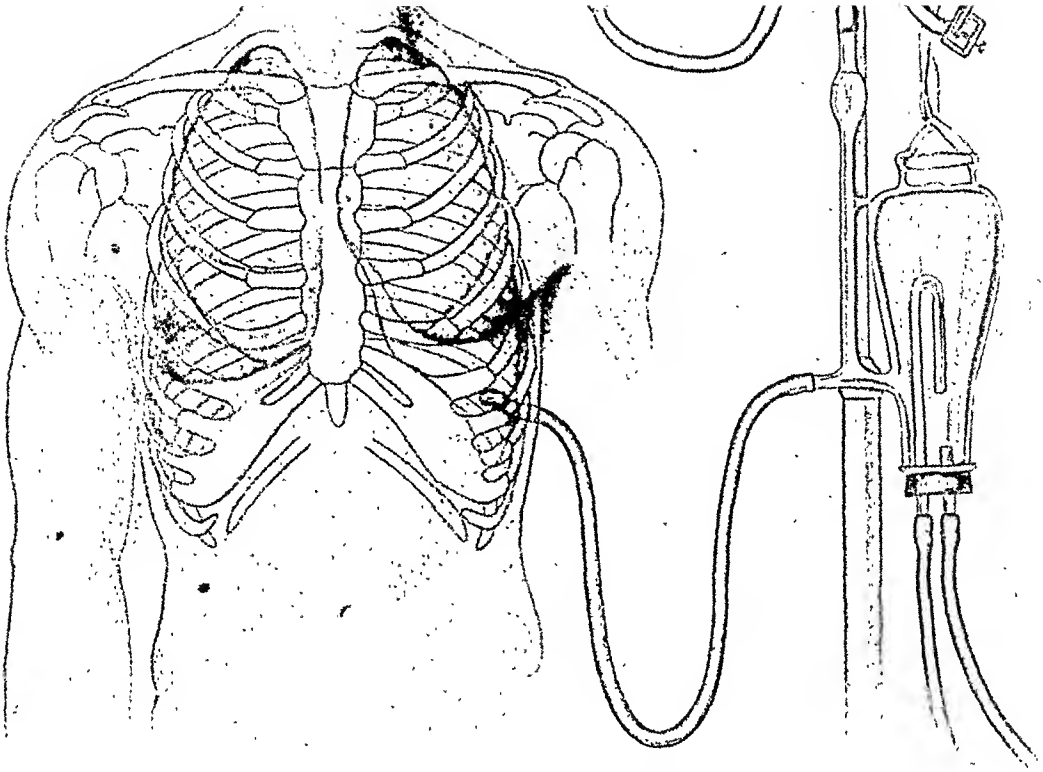

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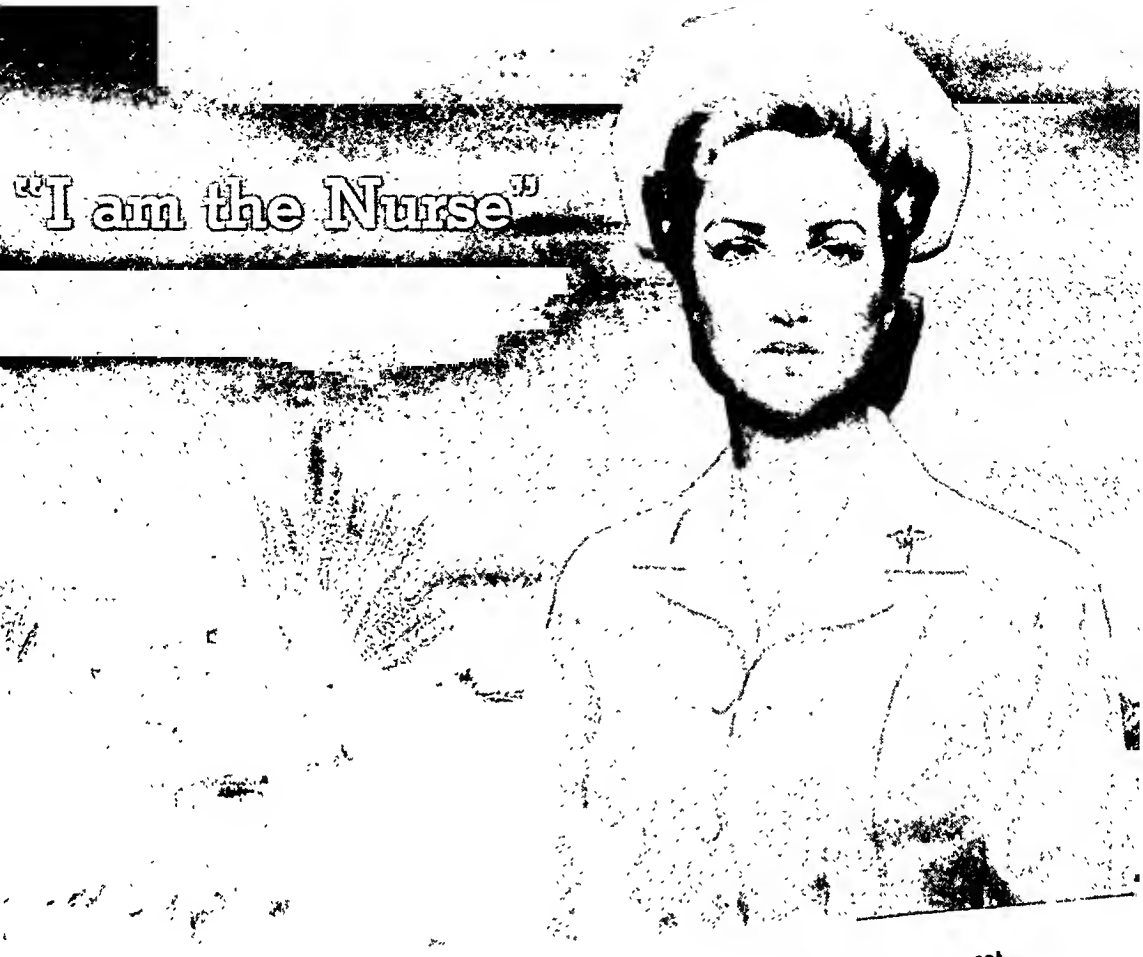

I am the nurse.
I walk with him
In his world af pain.
He is the warriar
  became a bay agoin
Returned ta us
  in the backwosh of wor.
By Gad, given back to us,
  ta make whale.
I am the nurse.
But I am sa few and he . . .
  yaur waunded mon . . .
  is legian!
Wamen, mathers of men,
  stand with me
  in the dark af night
  . . . and listen.
Do yau hear the murmur
  of a millian lips?

Do yau heor . . .
  the call far help,
  rising in pitch
Above the death-belch af
  cannon . . .
Colling fram the heavens,
  thraugh the whine
  af crushed wings . . .
Bubbling thraugh the acean's
  swell . . . tauching
  at every share?
Yes, you heor it . . . the coll
  of hurt.
You are a woman and hearing,
  you must heed.
When his teeth are clenched
  in poin . . . upon a wamon's
  nome . . .
Mine is the hand thot soothes.

When his eyes ore set
  upan a womon's face
  cherished lmoge plucked
  thraugh spoce,
Mine are the words that calm.
I om the nurse,
Stricken in heart with
  the single fear
Thot agoinst the grawing need
  my numbers cannat prevoil.
Far I om sa few ond he . . .
  is legion
  wha asks our aid.
Add your hands to mine
  wamen, mathers af men,
Lest I be toa few,
  lest victary hang
  like a mocking mask
Upon our Natian's honorl

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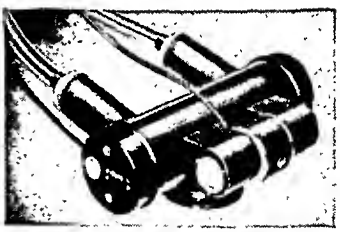

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DISEASES *of the* CHEST

VOLUME X SEPTEMBER-OCTOBER, 1944 NUMBER 5

Transitory Migratory Pulmonary Infiltrations Associated With Eosinophilia (Loeffler's Syndrome)* With the Report of an Additional Case

J. WINTHROP PEABODY, M.D., F.A.C.P., F.C.C.P.
Washington, D. C.

Since Loeffler[1,2] in 1932 and again in 1936 described the syndrome which has come to be known by his name, numerous cases of transitory migratory pulmonary infiltrations have been reported in the foreign literature. The English and American literature on the subject, on the other hand, remains remarkably scanty. It may be significant that several of the few cases reported in it occurred in such far-off places as Hawaii and Palestine and not in North America or the British Isles. Whether this apparent distribution of the disease can be accepted at its face value from the standpoint of incidence, or whether the paucity of the English-American literature means unfamiliarity with the syndrome, or lack of alertness in diagnosis, I am naturally not prepared to say.

Freund and Samuelson[3] in 1940 collected from the world literature 105 cases, including the 51 reported by Loeffler in his second communication in 1936. My own search of the American and English literature has revealed considerably fewer than 25 cases, even if all reported cases should be accepted as authentic. Certain of them seem of very doubtful validity, and a count derived only from titles listed in the *Quarterly Cumulative Index Medicus* would be most misleading, as a study of individual cases shows. I am inclined, for instance, because of the lack of serial observations, to question the 4 autopsied cases reported by von Meyenburg.[4] Equally doubtful is the case reported by Smith and Alexander,[5] which concerns a child who never completely recovered from bronchopneumonia and who died of terminal sepsis, possibly associated with leukemia, though even autopsy did not establish the diagnosis.

*Presented before the North Midwest Regional District, American College of Chest Physicians, in joint meeting with the Minnesota State Medical Association, Rochester, Minnesota, April 15, 1944, and before a joint meeting of the Indiana and Kentucky members of the American College of Chest Physicians, Louisville, Kentucky, April 16, 1944.

It is not surprising, as Freund and Samuelson point out, that Loeffler's syndrome has been recognized only recently, for only recently have mass roentgenologic examinations been made in outpatient clinics, schools, and elsewhere. Discussion of the disease is still not definitive, nor is it likely to become so, these same authors observe, until cases begin to be reported in such detail that adequate critical analysis is possible. Detailed data were available in only a quarter of the 105 cases which they collected, and their advice is sound that physicians who encounter possible cases should take systematic histories, including age, sex, season, climate, site of the disease, symptomatology, clinical signs, roentgenologic studies, blood studies, sputum examinations, stool examinations, duration of the illness, and possible etiologic factors.

Clinical Factors—Loeffler's syndrome is best described as a transitory, migratory pulmonary infiltration demonstrable by roentgenologic examination and associated with eosinophilia, which may be very marked. The severity of the roentgenologic findings and the level of the eosinophilia are frequently in startling contrast to the physical findings, which may be entirely normal and which seldom consist of more than a few moist and sibilant rales over the areas of consolidation.

The clinical course is characteristically mild and the symptoms are minimal. As listed by Loeffler, they include only mild acoustic symptoms, fatigue, and coughing, sometimes accompanied by sharp pains in the chest and possibly by a small production of sputum. More recent writers have added to the list asthmatic attacks, bronchitis, and moderate temperature elevations. Douady and Cohen (cited by Baker[6]) reported a case in which hemoptysis was a feature; tuberculosis was not proven and recovery was rapid.

Kartagener[7] described a case which he classified as Loeffler's syndrome and in which chronicity was an outstanding feature. He also mentioned another type of syndrome described by Lohr and by Leon-Kindberg characterized by symptoms so acute and severe as to suggest a septic process; the illness lasted for several months. Kartagener raised the question as to whether these manifestations were variants of the same disease or, as seems more likely, separate entities. In the two cases reported by Karan and Singer[8] the symptoms were pronounced and in one instance cardiac manifestations were noted; the pulmonary infiltrations as observed serially were also slow in disappearing.

Roentgenologic Findings—Loeffler's original description of the roentgenologic findings, supplemented by Breton's later description (cited by Hoff and Hicks[9]), is to the effect that large or small consolidations appear suddenly in various parts of the lung, and disappear rapidly, only to reappear elsewhere within variable pe-

riods of time. In Loeffler's cases the duration was from 3 to 8 days, and in one instance there was a recurrence at the end of a year. The infiltrations are most frequently observed in the lower lung fields, near the diaphragm, and the shape is various. They may be large or small, unilateral or bilateral, irregular or circular, and sharply defined or vaguely outlined. They sometimes bear a distinct resemblance to the adult type of pulmonary tuberculosis.

Eosinophilia—Although eosinophilia, sometimes accompanied by a moderately high leukocytosis and sometimes by a slightly elevated sedimentation rate, is one of Loeffler's original criteria of diagnosis, in many of the reported cases the eosinophilic percentage was low, and sometimes eosinophiles were absent from the blood. Soderling's[10] explanation is that eosinophilia is not marked when infection and fever are present, but tends to reappear when these manifestations have subsided. The variability has also been explained by the variability of the supposedly responsible protein allergens. Whether this disregard of Loeffler's original criteria of diagnosis is justified is open to question; if it is not, the number of reported cases in the English-American literature must be still further reduced. There is no parallelism, Loeffler pointed out, between the size of the roentgenologic lesion and the degree of eosinophilia, which may be at its highest level when the pulmonary infiltrations have begun to diminish.

Pathogenesis—The most confused factor in Loeffler's syndrome is the pathogenesis, which is still undetermined and which is apparently multiple. Loeffler himself concluded that the pulmonary infiltration was on an allergic basis, with the pathogenesis similar to that of erythema nodosum. He considered, and ruled out, pulmonary embolism with infarction, pneumonia, bronchial asthma with atelectasis, pulmonary tuberculosis, and ascariasis. Maier,[11] who studied 100 cases personally, regarded the infiltration in this disease as identical with the temporary infiltrations long recognized in asthma, in which eosinophilic pneumonia is the background of the pathology. This type of pneumonia has been fully described by Miller and his associates,[12] who do not, however, regard the condition as the same entity as the disease described by Loeffler.

Soderling explained the lung picture as due to stagnation of secretions in bronchitis, which 4 of his 5 patients presented, combined with bronchial spasm and resulting in localized areas of atelectasis and emphysema. Such localized areas, he pointed out, may give rise to parenchymal shadows in severe attacks, although the findings are always transient. Breton (cited by Baker) advanced the same opinion. Soderling also believes that the Loeffler syndrome may be the real explanation of many cases of atypical pneumonia and abortive pneumonia, as well as of many cases of supposed

tuberculosis in which recovery takes place rapidly.

Engel (cited by Soderling) reported an epidemic cough which occurs in the general population in China in May and June, when the privet is in flower. On two occasions when he himself developed such a cough, roentgenologic examination showed massive pulmonary consolidations, associated with eosinophilia of 20 to 25 per cent. The pulmonary infiltration disappeared within 24 hours in the first attack and within 6 days in the second. A similar morbid picture was observed in another patient, whose eosinophilia, however, was only 6 per cent. Engel conceived of the lung changes as a Quincke's edema and proposed for the disease the name "oedema allergicum pulmonis." Soderling regards Engel's observations as next in importance to Loeffler's and spoke of the disease as the Loeffler-Engel syndrome. Other writers have accepted them less wholeheartedly.

It is now generally believed that the disease develops on an allergic basis. In most cases, however, the etiologic agent (or agents) responsible have not been identified, though intestinal parasitism, with apparent reason, has most frequently been indicted.

Opinions differ as to precisely how the pathologic changes are brought about. Muller (cited by Frimodt-Moeller and Barton[13]) was able to produce in himself multiple fleeting pulmonary infiltrations, with associated eosinophilia, by eating material containing *Ascaris* ova and suggested that the roentgenologic shadows may be caused directly by the passage of *Ascaris* larvae through the lungs, after they have penetrated into the liver through the intestinal wall. The possibility of such a migration has been demonstrated by Japanese workers. Another theory, which on the surface seems more reasonable, is that the pulmonary changes are indirect and represent an allergic reaction to the presence of ascarids in the body. It is acknowledged that reactions of this sort may be violent. Baer,[14] for instance, mentioned a zoologist of his acquaintance who developed severe rhinitis and conjunctivitis if he so much as walked across a laboratory in which ascarids were being worked on.

Cause and effect reasoning also substantiates the theory that parasitism is responsible for Loeffler's syndrome. Stefano (cited by Hoff and Hicks) reported a case of recurrent asthmatic attacks associated with transient areas of pulmonary infiltration, in which amebae were found in the sputum though not in the stools. Emetine therapy cured the infestation and the patient was simultaneously completely relieved of his asthma. Beck[15] reported a clearcut case of Loeffler's syndrome in which he observed dramatic clinical improvement, disappearance of urticaria, and regression of the pulmonary infiltration following treatment by crystalloids of intestinal infestation with *Strongyloides intestinalis* and *Ascaris lumbricoides*.

Hoff and Hicks reported a case of this syndrome associated with *Endoemba histolytica* infestation. The patient had had severe asthmatic attacks for 3 months, and eventually presented a clinical picture suggestive of early amebic hepatitis. Although treatment with anayodin resulted in only slight improvement, the response to emetine was dramatic, the patient being completely and simultaneously relieved of his asthma and his intestinal infestation. These authors speculate that if stool and sputum examinations had been carried out in the cases reported by Engel, it is quite possible, in view of the frequency of amebic infestation in China, that amebiasis rather than the privet flower might have been revealed as the etiologic agent.

Diagnosis—The diagnosis of Loeffler's syndrome rests upon three considerations: (1) The radiologic picture, the severity of which is out of all proportion to the insignificance of the physical findings and the mildness of the clinical course. (2) The transience of the roentgenologic findings, the persistence of which raises doubt as to the diagnosis. (3) The degree of eosinophilia, which, as has been noted, cannot be correlated in respect to chronology with the severity of the pulmonary changes as demonstrated by x-ray.

Films must be made at frequent intervals, for diagnosis cannot be made upon a single investigation. Loeffler's advice that examinations be made every second day represents an ideal rather than a practical plan. Baer notes that a single film in his case suggested neoplasia and others have called attention to the similarity between the roentgenologic picture in this disease and in coccidioidomycosis, as described by Dickson.[16] Tuberculosis, however, presents the greatest difficulty in differential diagnosis. It is excluded by the variations in the roentgenologic shadows, the prompt disappearance of the pathologic changes, and the consistent failure to find acid fast bacilli in the sputum. Indeed, the categoric statement may be made that if, after adequate tests, tubercle bacilli cannot be found in the sputum or the gastric secretion, the disease is not tuberculosis.

The differentiation of Loeffler's syndrome from tuberculosis is extremely important. For one thing, the latter disease demands a regimen of life, with all its social and economic implications, which the former does not. For another, the institution of certain forms of treatment for tuberculosis, such as pneumothorax, could readily give rise to disastrous consequences in a non-tuberculous subject.

Therapy—It will be noted that in all the reported cases the therapy was directed toward the allergic manifestations rather than toward the Loeffler syndrome itself, the course of which was practically always so mild that treatment was not required. If therapy should prove necessary, calcium lactate in 3 gm. doses is recommended by Engel (cited by Soderling).

Fig. 2—3/16/42

Fig. 1—3/12/42

CASE REPORT

All things considered, the case reported herewith seems to fit into the syndrome described by Loeffler. The essential facts follow:

M. B., a white male government clerk 21 years of age, was first seen in consultation March 16, 1942. For the past 6 months he had suffered from, and entirely neglected until 2 weeks earlier, "a very bad cold" and moderately productive cough, associated with a slight loss of weight and a sense of fullness and later of soreness in the chest. When he first sought medical advice from his family physician, roentgenologic examination of the chest had revealed an infiltration in both lungs, more marked on the left side, extending from the level of the third rib anteriorly to the level of the fifth rib. The findings had been interpreted as an acute infection in both upper lobes, possibly of tuberculous origin.

The past history was without incident except for the usual diseases of childhood (measles, chickenpox and whooping cough) and appendectomy for acute disease at the age of 9 years. All other illnesses were specifically denied, and the family history was specifically negative for cancer, diabetes, tuberculosis, renal and cardiac disease, and allergic states.

Physical examination at this time was essentially negative. Stereoscopic examination of the chest revealed the bilateral lesions previously described, which were now somewhat less extensive.

Time and space will be saved if certain laboratory examinations which were carried out at this time and during the subsequent 23-month period of observation, and which were always substantially the same, are summarized at this point. Urinalysis was always essentially negative. The sputum, although examined by smear, concentration and culture at various times, never revealed acid fast bacilli, and the only findings of significance was an eosinophilia, which varied from moderate to marked. The tuberculin patch test and the Mantoux test were negative, as were all the skin tests carried out at various times during the illness. Examination of a stool specimen March 16, 1942, revealed larvae of *Ascaris lumbricoides*, but all subsequent stool examinations were negative.

The hemoglobin was never lower than 78 per cent and the red blood cells never numbered less than 4,200,000 per cu. mm. The sedimentation rate varied between 13 and 24 mm. per hour. The white blood cell count and the differential count, however, varied considerably at different periods of the illness. March 16, 1942, the white blood cell count was 14,450 per cu. mm. The differential count showed 48 per cent eosinophiles, 32 per cent segmenters, 17 per cent lymphocytes, and 3 per cent myelocytes.

Fluoroscopic examination April 24, 1942, revealed clear lung fields, but in view of his recent history and the previous roentgenologic findings, the patient was told that he apparently had an active pulmonary infection, probably of tuberculous origin, and continued observation was advised until a positive diagnosis could be made. A contemplated marriage was also advised against.

The patient disregarded both pieces of advice. He was not seen again until July 20, 1942, at which time he was suffering from an asthmatic attack (his first) of such severity that he was hospitalized at once. Dr. James Nolan was asked to investigate the allergic state and has continued to direct the treatment ever since. Stereoscopic examination of the chest at this time again revealed no abnormalities.

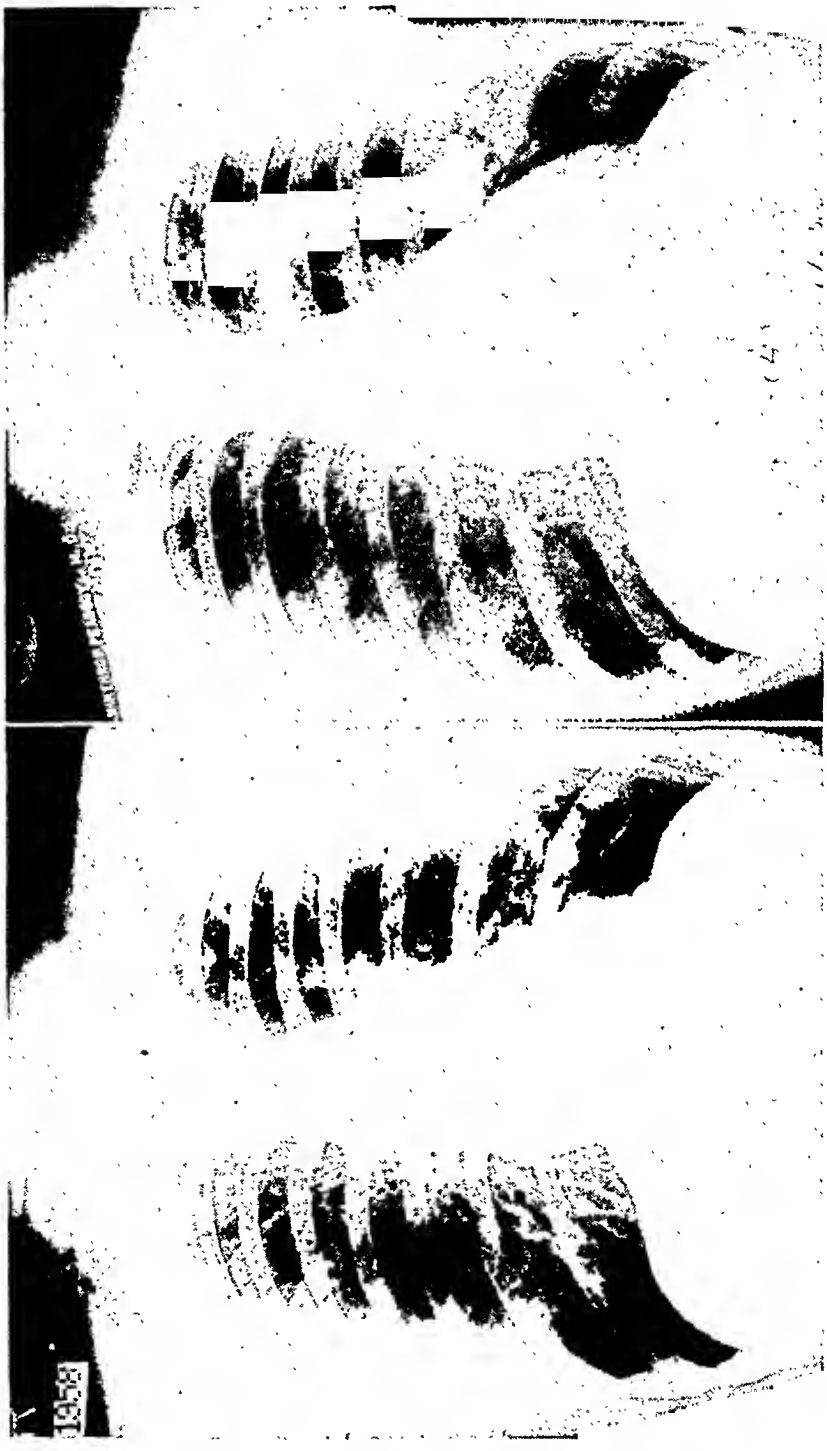

Fig. 4—1/16/43

Fig. 3—7/20/42

The patient was discharged from the hospital at the end of a week, but continued to have attacks of asthma, chiefly in the form of wheezing and dyspnea, at first every day or two, then every 6 or 8 hours, and eventually every 2 hours. The only other symptom was anorexia.

Stereoscopic examination of the chest January 6, 1943, again showed the lung fields clear. The white blood cells numbered 14,450 per cu. mm., with 36 per cent eosinophiles, 48 per cent polymorphonuclear leukocytes, and 16 per cent lymphocytes.

The patient was hospitalized for the second time March 7, 1943, for an acute upper respiratory infection and continued attacks of asthma. The temperature ranged between 100° and 102° F. for several days, but there was no other marked elevation during the illness and seldom any elevation at all. Physical examination was negative except for many moist, musical rales throughout the chest, somewhat more marked at the left apex. Psychiatric examination, undertaken because of a mental and emotional strain to which the patient had recently been subjected, furnished no diagnostic aid.

Shortly after his discharge from the hospital the patient went to Florida, where he spent 4 months and where he had no medical supervision. Soon after leaving the hospital he developed anesthesia of the dorsum and palm of the left hand, with paralysis and anesthesia of the fourth and fifth fingers of the same hand, possibly as the result of the adrenalin therapy used to control the asthmatic attacks. The paralysis gradually disappeared, but the patient continued to complain of numbness over the affected areas and of pain along the course of the ulnar nerve. Despite the change of climate his asthmatic attacks continued.

The patient was again seen in consultation August 9, 1943. Stereoscopic examination of the chest August 6 had revealed a homogeneous density overlying the lateral portion of the left lung and extending from the apex to the seventh rib posteriorly. A diffuse, predominantly fibrotic infiltration of the upper lobe on this side enclosed several radiolucent shadows simulating cavities. The heart was somewhat retracted to the left as the result of the fibrotic changes. Another triangular area of dense infiltration was observed in the right upper lobe, between the second and third ribs anteriorly. Both bases were relatively clear.

Repetition of the stereoscopic examination August 9, 1943, revealed essentially the same findings as on August 6. They were interpreted as indicative of thickening of the pleura and bilateral fibroid tuberculosis. A decision as to activity was withheld pending further clinical observation and laboratory investigation.

The white blood cell count August 9 was 17,600 per cu. mm. The differential count showed 14 per cent eosinophiles, 2 per cent basophiles, 2 per cent stabs, 12 per cent lymphocytes, and 70 per cent segmenters. Two days later the white blood cell count had risen to 23,800 per cu. mm. and the eosinophilia to 63 per cent; there were 29 per cent polymorphonuclear leukocytes, 7 per cent lymphocytes, and 1 per cent monocytes. The findings were now interpreted as indicative of a severe infectious process with a marked allergic reaction.

The patient was hospitalized for the third time August 26, 1943, because of the severity and frequency of his asthmatic attacks. In the year since their onset he had lost between 35 and 40 pounds and he now looked very ill, though the physical examination was again essentially negative. Stereoscopic examination of the chest August 27 showed the right lung

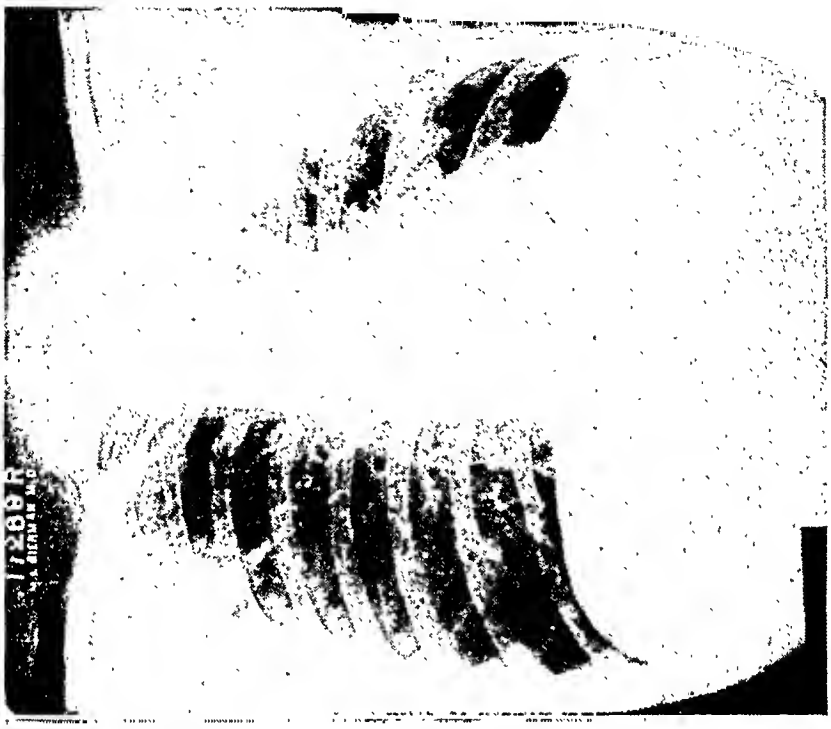

Fig. 6—8/6/43

Fig. 5—8/6/43

clear. The entire left lung field was occupied by an extensive fibrotic and infiltrative process, and an area of decreased density in the infraclavicular region was regarded as a possible cavity. Another examination September 3, 1943, showed substantially the same roentgenologic findings, which, although they were suggestive of tuberculosis, in the light of the history and clinical course were now interpreted as probably due to some type of fungous infection.

The differential blood count August 26 showed 61 per cent eosinophiles. September 4 the eosinophilia had fallen to 41 per cent. The white blood cells numbered 15,600 per cu. mm. on the first examination and 11,800 per cu. mm. on the second.

The patient was not seen again until February 14, 1944, at which time stereoscopic examination showed the lung fields clear. The hemogram showed 11,200 white cells per cu. mm., with 19 per cent eosinophiles, 72 per cent segmenters, and 9 per cent lymphocytes.

The patient is still under treatment for asthma, the cause of which, the allergist reports, has not yet been identified in spite of exhaustive tests. At times the chest presents physical findings typical of asthma, but usually, as throughout the illness, the physical examination is essentially negative. Treatment has been entirely symptomatic. Adrenalin gives the most satisfactory results, but they are, of course, always temporary.

COMMENT

There are several striking features in this case:

1) The high degree of eosinophilia, which at one time reached 63 per cent and which was never lower than 14 per cent.

2) The definitely transitory, migratory character of the pulmonary infiltration, which variously involved one lung and both lungs, which varied as to location, and which at intervals disappeared entirely. The changes were sometimes observed within a few days and sometimes at long intervals, though the length of the interims is perhaps not significant, since the patient frequently disappeared from observation. It is worth pointing out in this connection that although the films were made in three different laboratories, the three roentgenologists were in accord in their interpretations.

3) The insignificant character of the physical findings, which, except for certain changes to be expected in severe asthma, amounted to little more than the occasional appearance of rales.

4) The failure on repeated examinations by smear, concentration, and culture, to find acid fast bacilli in the sputum, as well as the negative results of the tuberculin patch and Mantoux tests.

5) The presence of larvae of *Ascaris lumbricoides* in the stool on a single examination but the repeated failure to find them in subsequent examinations over a 23-month period which would seem to exclude this parasite as the etiologic agent in this special case.

My personal role in this case has been that of chest consultant. As such, I have consistently opposed the diagnosis of pulmonary tuberculosis, though I must grant that when I first saw the patient

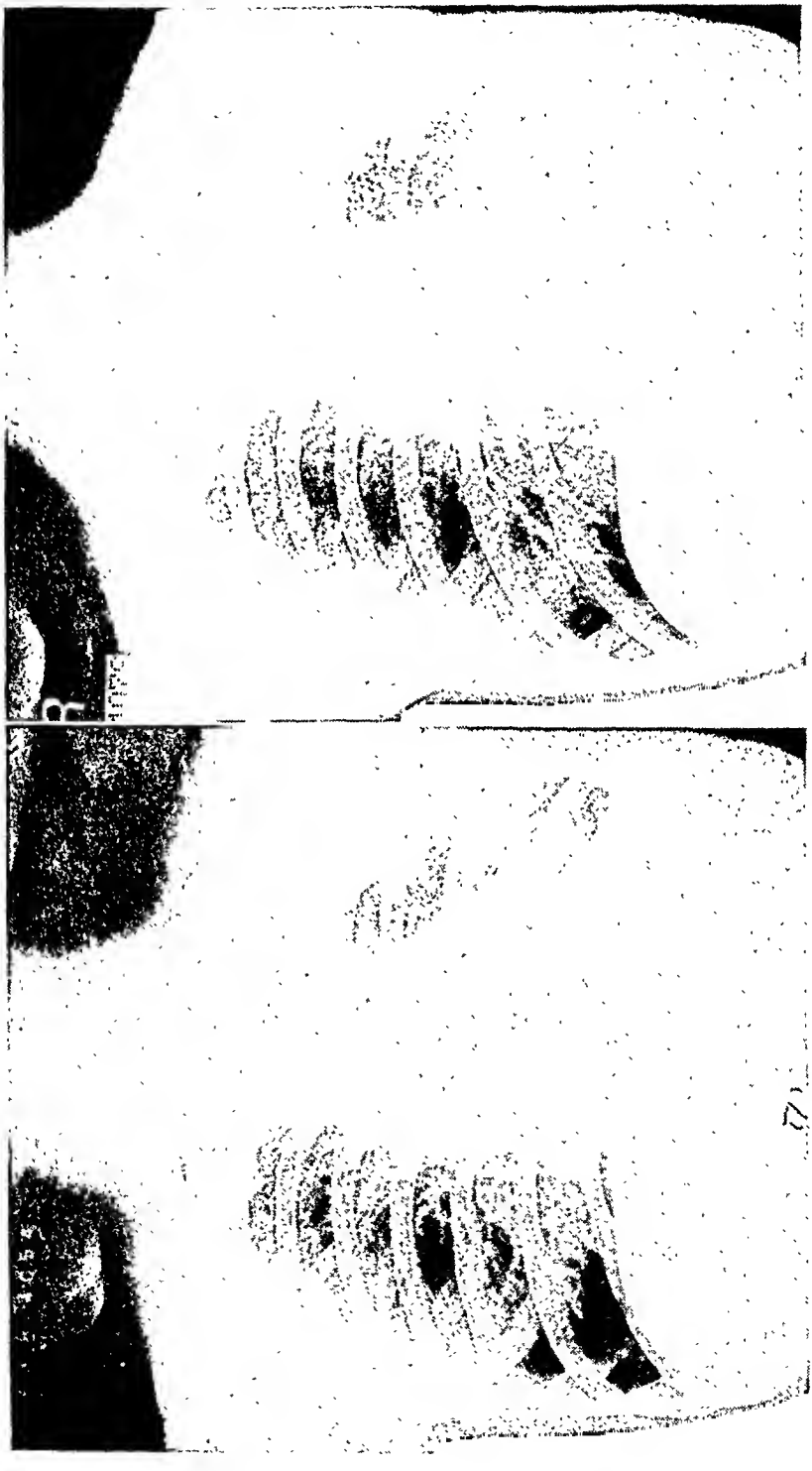

Fig. 8—8/27/43

Fig. 7—8/9/43

the history and roentgenologic findings strongly pointed to this conclusion. My personal conviction, however, is that if acid fast bacilli cannot be demonstrated in the sputum, the disease, whatever it may prove to be, is positively not tuberculosis.

The present impression, as already noted, is that the condition is a marked allergic reaction secondary to some severe infectious process, the cause of which is yet to be determined but the manifestations of which seem to place the case among the few instances of Loeffler's syndrome so far observed in this country.

SUMMARY

1) Since Loeffler's syndrome was first described in 1932, a large number of cases have been reported in the foreign literature and a small number in the English-American literature. Whether all of the reported cases are true instances of the syndrome is open to decided doubt.

2) The syndrome is best described as a transitory, migratory pulmonary infiltration, demonstrable by roentgenologic examination and associated with eosinophilia, which may be very marked. The severity of the roentgenologic findings is in surprising contrast to the physical examination, which is frequently entirely negative, and to the minor symptomatology and mild clinical course.

3) The pathogenesis is still undetermined, but the disease is now generally believed to develop on an allergic background, and intestinal parasitism has been identified as the causative agent in the few cases in which any identification at all has been possible.

4) Diagnosis rests upon the radiologic picture, the transience of the roentgenologic findings, and the degree of eosinophilia. It cannot be made upon a single film. Pulmonary tuberculosis is the most frequent differential diagnostic consideration, and for therapeutic reasons the differentiation is extremely important. Therapy is directed toward the allergic disease, Loeffler's syndrome, in itself seldom requiring treatment.

5) An additional case of Loeffler's syndrome is herewith added to the American literature of the subject.

RESUMEN

1) Desde cuando se describió por primera vez el síndrome de Loffler en 1932, ha aparecido un gran número de casos en la literatura extranjera y un pequeño número en la literatura anglo-americana. Se duda seriamente que todos los casos presentados sean verdaderos ejemplos de este síndrome.

2) La mejor descripción del síndrome es que éste es una infiltración pulmonar transitoria y migratoria, demostrable mediante examen roentgenológico y asociada con eosinofilia que puede ser muy marcada. La gravedad de los hallazgos roentgenológicos presenta

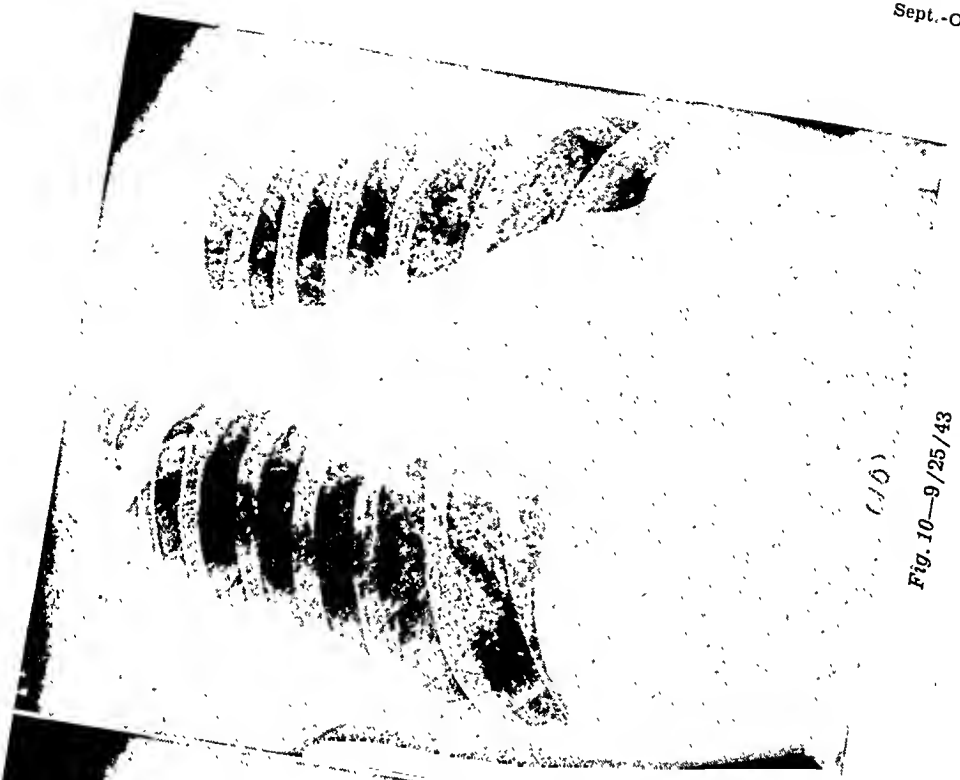

Fig. 10—9/25/43

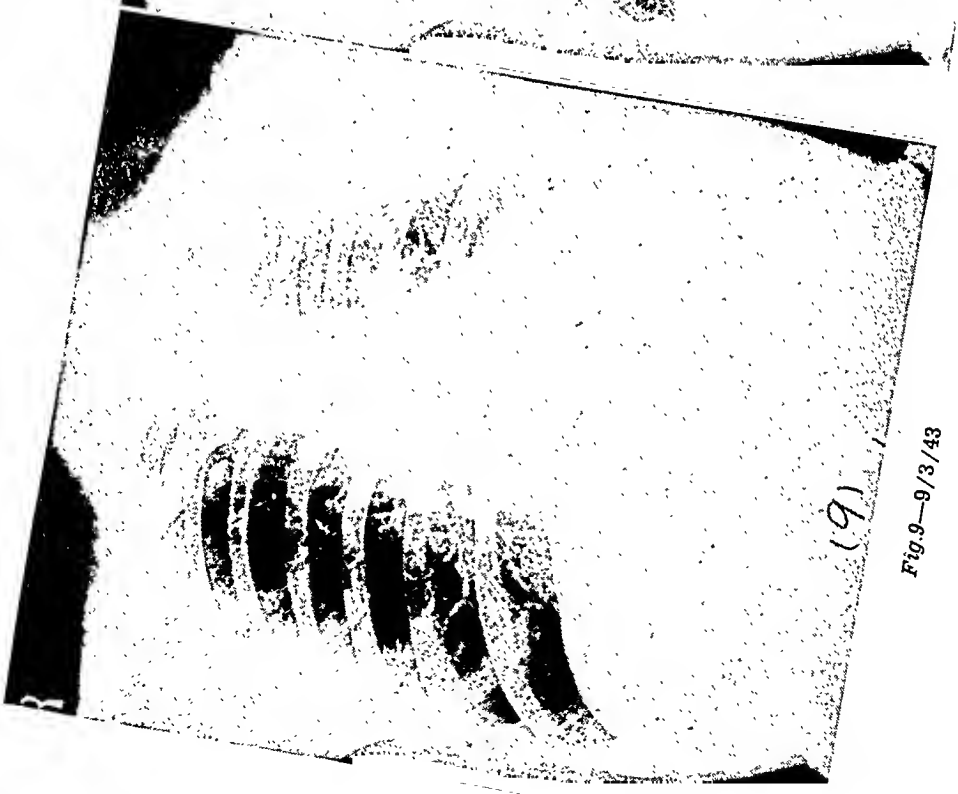

Fig. 9—9/3/43

Fig. 13—4/11/44

Fig. 12—4/11/44

Fig. 11—2/14/44

un contraste sorprendente con el examen físico, que con frecuencia es enteramente negativo, y con la sintomatología menor y la benigna evolución clínica.

3) No se ha determinado todavía la patogenia, pero se cree comunmente que se desarrolla en un fondo alérgico y el agente etiológico identificado ha sido parasitismo intestinal en los pocos casos en los que ha sido posible hacer la identificación.

4) El diagnóstico está basado en el cuadro radiológico, en lo transitorio de los hallazgos roentgenológicos y en el grado de eosinofilia. No puede establecerse con una sola película. Se considera más frecuentemente a la tuberculosis pulmonar en el diagnóstico diferencial, y la diferenciación es en extremo importante por razones terapéuticas. Se dirige el tratamiento hacia la enfermedad alérgica; el síndrome de Loffler de por sí, sólo en raras ocasiones requiere tratamiento.

5) Se agrega otro caso del síndrome de Loffler a la literatura americana sobre esta materia.

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Cavernous Breathing: Is There Such a Sound?

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Austin Flint[1] claims the credit of first describing the distinctive characteristics of "cavernous breathing." Flint[2] described cavernous breathing as follows: "The characters of the cavernous respiration are, an inspiratory sound low in pitch, non-vesicular in quality—a simple blowing sound—the expiratory sound still lower in pitch, with the same quality, its length and intensity variable." Flint further stated: "The liability to error is in confounding the cavernous with the vesicular respiration, the chief point of difference being the presence of the vesicular quality in the latter and its absence in the former." Since 1852 the above description of "cavernous breathing" has been accepted by nearly all authors and teachers of physical diagnosis. The following discussion concerns "cavernous breathing" and not the auscultatory diagnosis of cavities in the lung. Is "cavernous breathing" described by Austin Flint truly characteristic of the noise produced in the cavity? Flint qualifies the cavity over which cavernous breath sounds are heard: an empty cavity, freely communicating with the bronchial tree and with flaccid walls. The author has the opinion that the cavity produces no such auscultatory findings. The opinion is based on the fact that the author has never found the distinctive characteristics of cavernous breathing over cavities. Flint has mistaken exaggerated vesicular breathing for evidence of cavitary formation. The mistake is a natural one, for exaggerated vesicular breathing is identical to Flint's cavernous breathing except for differences in the qualities of the sounds during inspiration (Table I).

Flint[2] stated in his textbook published in 1875: "The liability to error is confounding the cavernous with the vesicular respiration, the chief point of differences being the presence of the vesicular quality in normal vesicular respiration and its absence in cavernous respiration." If there is a liability to error between normal and cavernous respiration the opportunity for error is multiplied tenfold in differentiating exaggerated vesicular respiration from cavernous respiration.

How many physicians can answer, right off, in what types of respiratory sounds the quality of the inspiratory sound differs from the expiratory sound? The author has put this question to many classes of medical students year after year in their senior year and with only a few correct answers. Vesicular breathing is the only sound in which the quality of the inspiratory sound differs from the

Fig. 1

Fig. 1—A reproduction of an x-ray film (tomograph) revealing a large superficial cavity in the upper part of the right lung, 4 cm. posteriorly from the thoracic wall. Auscultation over the right upper lobe posteriorly revealed the following: Breath sounds were markedly diminished in intensity and broncho-vesicular in character. Moist rales were distant and high pitched. Here we have a large superficial cavity. The cavernous murmur described by Flint was not heard. *Fig. 2*—A reproduction of an x-ray film (tomograph) taken at 4 cm. from the posterior thorax. The cavity is in the left upper lobe. On auscultation no "cavernous respiration" as described by Flint was heard. Broncho-vesicular breathing with fine high pitched moist rales were heard over the area of the cavity.

Fig. 2

TABLE I

		Normal Vesicular Respiration	*Cavernous Respiration*
Inspiration	Quality	Vesicular	Blowing
	Pitch	Low	Low
	Duration	|————————|	|————————|
Expiration	Quality	Blowing	Blowing
	Pitch	Lower	Lower
	Duration	|——— |	|═══ |

expiratory sound. Unfortunately for most medical students and physicians it is difficult to distinguish between "vesicular" and "blowing" qualities. The vesicular quality is difficult to describe. Various terms were in use as early as 1856[3] in describing the vesicular quality—soft, breezy, expansive; a sound produced by a gentle breeze among the branches and leaves of the trees; similar to that of a pair of bellows, the valve of which acts noiselessly; like the sound of softly sipping air with the lips, etc. As usually happens, when description is difficult, we have many. The one least descriptive but most romantic has been universally used to describe the inspiratory vesicular murmur, i.e., the sound produced by a gentle breeze through the branches and leaves of the trees. The author has attempted to find something in common between the sound produced by the wind gently breezing between the branches and leaves of trees and the quality of vesicular breathing, over the past twenty summers, but has failed to associate the two sounds in any manner. He is content just to call the quality of vesicular inspiration a "vesicular quality" and leave to the imagination of the student the description of the sound. All unrhythmic sounds are difficult to describe and differentiate where there are no sharp variations. This unfortunately is true of most breath sounds except the musical one, "amphoric breathing." Once you hear a musical sound you have no further difficulty in remembering the quality irrespective of pitch and duration, as, for example, the sound of piano, violin, harp, etc. Could you *describe* the sounds of these musical instruments? Yet there is no difficulty in *identifying* them. From the above discussion, when two sounds have the same characteristics as have both vesicular and cavernous breath sounds, except-

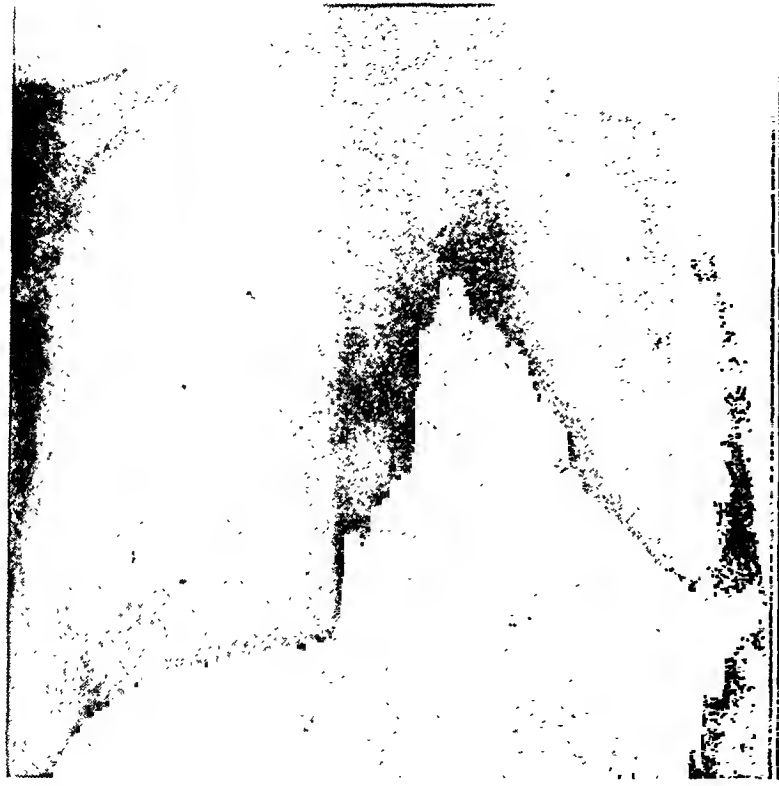

Fig. 3

Fig. 4

Fig. 3—A reproduction of an x-ray film (tomograph) showing a giant large cavity in the left lung. The tomographic study revealed the whole cavity to be 12 cm. from the posterior thoracic wall. On auscultation no "cavernous respiration" as described by Flint was heard. The breath sounds over the upper half of the left lung were diminished in intensity and broncho-vesicular in character. No moist rales were heard. *Fig. 4*—A reproduction of an x-ray film (tomograph) taken 6 cm. from the posterior thorax. In the left lung there is a giant superficial cavity and smaller cavity in the right upper lobe. Over both cavities the breath sounds were diminished in intensity and broncho-vesicular in character. High pitched moist rales were also heard. "Cavernous respiration" as described by Flint was not heard over both cavities.

ing slight variations in the quality of inspiration, we can understand the possibility for error.

When we further consider that Flint described cavernous breathing in 1852, when one worked without the aid of fluoroscopic and x-ray examinations, we can understand that errors in diagnosis could easily be made. How could Flint prove that cavitary formation existed in the lung over which he elicited cavernous breathing? The proof must have been in the morgue. When death is due to pulmonary tuberculosis, there is little trouble in finding a cavity in the lung and it was the latter type of confirmation that was used to prove cavernous respiration.

It is the author's concept that Flint made the error of interpreting as cavernous breathing the form of exaggerated vesicular breathing frequently found in the vicinity of tuberculous infiltration.

Flint[3] himself states: "An exaggerated vesicular murmur does not proceed from the portion of the lung affected but from the healthy lung situated near or remote from the seat of the disease." Fournet[3] also had similar thoughts of vicarious vesicular murmur. Fournet pointed out that exaggerated respiration ensues in healthy lung situated in the immediate vicinity of a local affection which compromises or abolishes the function within a limited space. Fournet gave as an example: surrounding a mass of tubercle, the vesicular murmur is rendered unduly intense. Not a bad observation for Flint and Fournet in 1850.

The author remembers, between 1920 and 1925 when few hospitals and tuberculosis sanatoria made use of the fluoroscope and x-ray, how frequently cavities were charted over the upper lobes anteriorly, the compensatory exaggerated murmur present being mistaken for cavernous breathing. With the increase in use of the fluoroscope and the x-ray the anterior cavities disappeared. We know how infrequently tuberculosis occurs in the anterior portions of the lung. Most cavities are in the posterior segment of the upper lobes and in the apices of the posterior segments of the lower lobes with the anterior segments enlarging and compensating for the loss of function in the posterior segments of the lobes.

Furthermore, the first auscultatory signs of cavity formation would be a combination of broncho-cavernous breathing if there were such a murmur as "cavernous breathing." Before the cavity develops there must be an area of caseation followed by liquefaction. When the liquefied material empties into the bronchial tree, a space forms in the lung that assumes a spherical shape because of the difference in pressure between the bronchial tree and the pleural cavity. The author has never heard cavernous breathing as described by Flint over such cavitary formation. When breath sounds were heard over such cavities a broncho-vesicular or bronchial

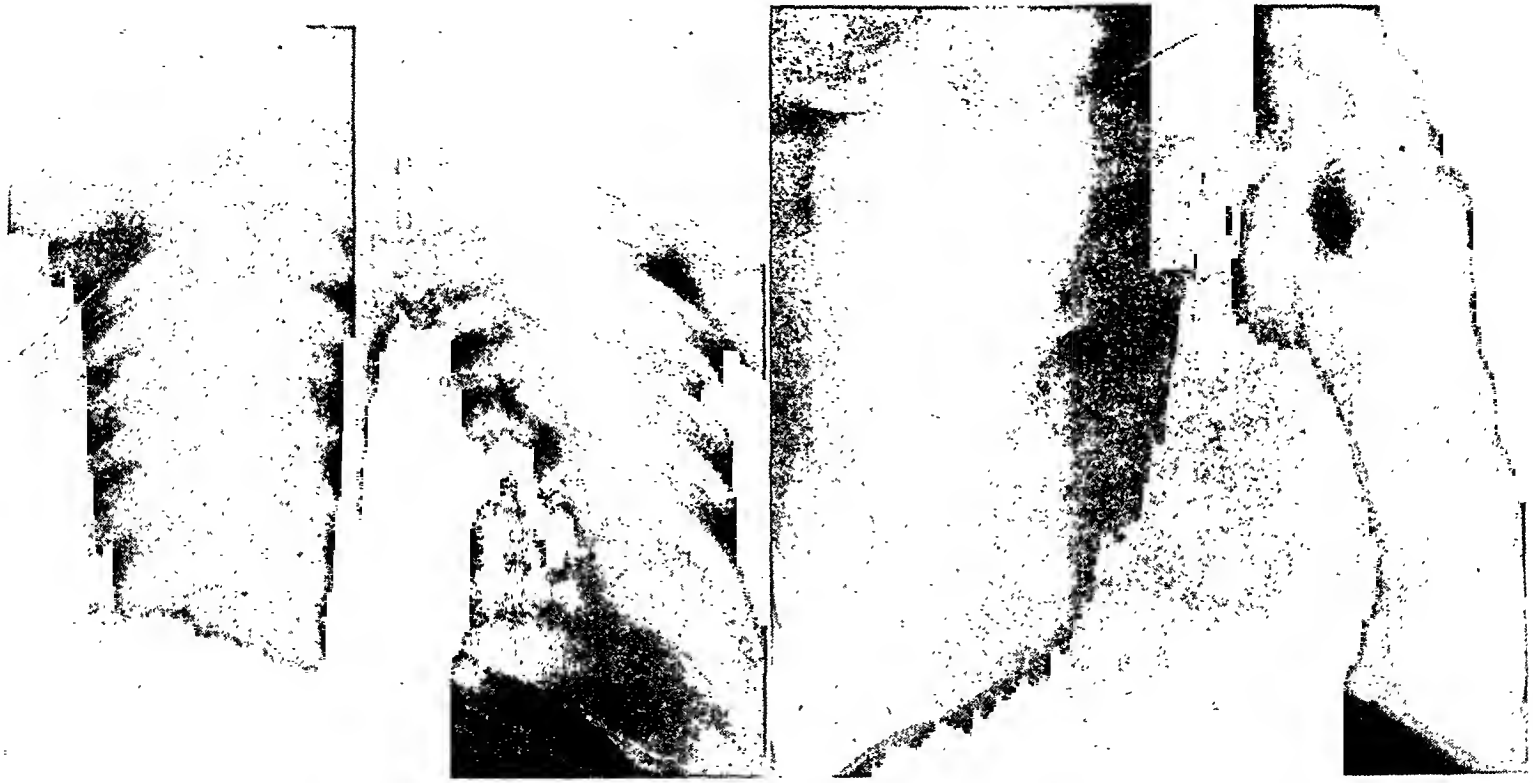

Fig. 5 *Fig. 6*

Fig. 5—A reproduction of an x-ray (tomograph) taken at 4 cm. from the posterior thorax. The tomographic study reveals two superficial giant cavities in the left lung. The lower cavity has a fluid level. No "cavernous breathing" as described by Flint was heard. Posteriorly from apex to eighth rib the breath sounds were markedly diminished in intensity. The character of the sounds could not be determined. In the upper half of the left axilla diminished broncho-vesicular breathing and medium high pitched moist rales were heard. *Fig. 6*—A reproduction of an x-ray (tomograph) taken at 10 cm. from the posterior thorax reveals cavitary formation in both lungs. Note the large cavity in an atelectatic left upper lobe. The left major bronchus can be distinctly seen. The cavity is distended in an atelectatic lobe because of a check-valve mechanism. No "cavernous breathing" as described by Flint was heard over the cavities. Over the right cavity broncho-vesicular breathing is heard. Over the left upper lobe the bronchial sound in the major bronchus is transmitted through the atelectatic left upper lobe.

sound was heard. The author agrees with the contemporaries of Flint[2] (Walsh, Skoda, Bath and Roger), with whom Flint debated the finding of cavernous breathing against the finding of a bronchial element over cavities. When the cavity takes on the form described by Flint (flaccid walls, empty and communicating with the bronchial tree), usually diminished breath sounds are heard. Not once has the author heard cavernous breathing, no matter how near such a cavity was to the lung surface. Over that portion of the lung, or lobe or segment of a lobe, which the cavity occupied, the breath sounds were greatly diminished in intensity. In few instances when the cavity lay away from the surface of the lung, the lung tissue overlying the cavity compensated, and exaggerated vesicular murmur was heard. Most cavities have a check-valve mechanism and are distended. It is natural that only small amounts of air enter the cavity and less air escapes. The small amount of air entering and returning from the cavity produces such weak sounds that they are not audible. In the check-valve variety of cavity[4] the overdistention of the cavity compresses the surrounding uninvolved lung tissue and further cuts down on the intensity of the sound. Silent cavities are no new thought, for other workers have previously reported such findings.[5] When the lobe or segment is completely involved with a caseous tuberculosis, there is an immediate loss in the volume of the lung involved. Only part of the caseous area may undergo liquefaction and the cavity may be surrounded with caseous tuberculous disease. The first auscultatory sign is diminished bronchial breathing. The trachea and major bronchi may shift toward the lobe or segment in which the loss of volume occurs. As time elapses, the fluids in the caseous area are absorbed and replaced by fibrotic tissues and calcium. A check-valve cavity may persist in such a caseous area for a long period. The atelectatic area may then become a good transmitter of sound and transmit bronchial or tracheal noises. This sound is frequently and incorrectly called broncho-cavernous breathing. Certainly the low pitched sound resembling "vesicular breathing" that Flint named "cavernous breathing" is not heard in conditions described above.

The following figures of x-rays of cavities of the lung will illustrate the absence of Flint's cavernous breathing in the presence of cavities.

From the above discussion the author believes he has built up a case against the teaching of "cavernous breathing" as a sound produced by cavities. The author hopes this presentation will stimulate further investigation of the breath sounds heard over cavities. He further believes that in the teaching of physical diagnosis, the diagnosis of cavity should be emphasized. The student

should be acquainted with the facts that diminished broncho-vesicular breathing is the most common finding over the cavity and that diminished broncho-vesicular breathing accompanied by high pitched moist rales is frequently heard over cavities. Students should also be instructed that thin-walled check-valve cavities are frequently silent. Uninvolved lung tissue overlying cavities may produce vesicular breath sounds. The student should also be instructed that a cavity may be present in an old atelectatic lobe, which may transmit the tracheal or bronchial noises. Such sounds have been frequently called broncho-cavernous breathing, incorrectly. The author, not to confuse the issue of cavernous breathing, has discussed only the auscultatory findings over cavities.

SUMMARY

The author has made the observation over a period of twenty years that the sound described by Flint and named by him "cavernous breathing" is not heard over cavities.

The author believes the sound Flint described was vicarious vesicular breathing, which he incorrectly associated with noises produced by the cavity.

RESUMEN

El autor ha observado durante un período de veinte años que el ruido descrito por Flint y llamado por él "respiración de tipo cavernoso," no se oye encima de las cavernas.

El autor cree que el ruido que Flint describió fue respiración vicaria, que él asoció erróneamente con ruidos producidos en la caverna.

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The Treatment of Bronchial Lesions by the Inhalation of Nebulized Solution of Sodium Sulfathiazole*

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A group of respiratory disorders, apparently refractory to other forms of therapy, was treated by the direct application of sulfa drugs to the mucosa of the tracheo-bronchial tree. This was accomplished by means of the inhalation of nebulized solutions.

The procedure of nebulization has been employed previously, notably with broncho-dilating drugs in bronchial asthma. Recently sulfa drugs have been utilized experimentally and clinically in a similar manner. Biancani[1] has experimentally demonstrated that the inhalation of nebulized solutions results in the deposit of the drug throughout the tracheo-bronchial tree and within the alveoli. Harris et al[2] administered sulfonamide micro-crystals by inhalation and were able to reduce the mortality in mice due to pneumococcus infection. Barach et al[3] reported the experimental use of nebulized promin in the treatment of tuberculosis in guinea pigs and revealed a satisfactory trend and higher survival rate of the treated animals. Castex et al[4] have described the use of nebulized solutions of sulfonamides in respiratory disorders and have noted favorable results.

MATERIAL AND METHOD

Prior to the institution of nebulization, the various forms of therapy employed in 50 consecutive cases without adequate response included sedation, expectorants, iodides, broncho-dilating drugs, bronchoscopy, lipiodol instillation, oral sulfonamides, clearance of upper respiratory foci and vaccines. Each case was selected upon the basis of the following criteria: (1) Symptoms of cough and expectoration of more than six weeks' duration. (2) No response to previous modes of therapy. (3) The presence of a bronchial lesion of bacterial origin. In several instances the non-infectious type of asthma was treated for the purpose of a control sample.

The patients were chiefly ambulatory or semi-ambulatory, white, male, adults, employees of the Panama Canal or in the military service of the United States. In addition to the usual hospital routine work-up, special studies were made in a large percentage by the allergy and nose and throat departments. All cases had sputum

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examinations and roentgenograms of the chest. In many patients blood specimens were submitted after four to seven days of treatment for the determination of sulfathiazole levels.

The method was similar to the one used by Stacey,[5] who reported beneficial results in five cases of bronchiectasis. A 5 per cent solution of sodium sulfathiazole was placed in a nebulizer and this was connected by a rubber tube to an oxygen tank equipped with a flow meter. A rate of flow of four liters per minute was found satisfactory. The patient held the nozzle of the nebulizer between the teeth and breathed with his mouth open for a period of twenty minutes. Treatments were administered three times daily for an average of ten consecutive days. It was determined that approximately 2 cc. of the solution was utilized in a single treatment. Inasmuch as the possibilities of decomposition, irritability and diminution of therapeutic efficiency arose after 48 hours, fresh solutions were dispensed frequently.

RESULTS

The diagnosis in each case was founded upon the correlation of the clinical, roentgenological and laboratory data. The response to therapy was recorded on the basis of reduction in paroxysms of cough, diminution and change in character of expectoration, subsidence of objective signs (wheezes, rales) and general improvement. Table I furnishes the details of the results.

There was no improvement in 7 cases (14%), slight improvement in 11 cases (22%), moderate improvement in 15 cases (30%), and marked improvement in 17 cases (34%). Thus improvement was noted in 43 cases or 86 per cent of the entire series. Generally after three or four days of treatment a definite change was noted; paroxysms of cough lessened, expectoration decreased and the sputum became less purulent. The patient often claimed that breathing seemed easier and the feeling of tightness of the chest disappeared. In the asthmatic group musical rales became scanty or absent and vital capacity tests, as studied in several cases, revealed a definite increase in respiratory reserve.

In two cases toxic reactions were observed and the treatment was abandoned. Both occurred within twenty-four hours and were local, characterized by discomfort and swelling of the naso-pharyngeal mucosa. They were mild and subsided within twelve hours. The fact that no systemic reactions were detected can be explained by the small dosage and subsequently the minimal absorption of sulfathiazole in the blood.

The sulfonamide comparator described by Churg and Lehr[6] was employed in fifteen cases, but was discarded because of inaccuracy for low levels. The method of Bratton and Marshall[7] was utilized in

TABLE I

RESPONSE TO THERAPY*

	Number of Cases	*No Improvement*	*Slight Improvement*	*Moderate Improvement*	*Marked Improvement*
Asthma, Bronchial, Infectious	12	1	3	4	4
Asthma, Bronchial, Non-Bacterial	4	3	1	0	0
Bronchitis, Subacute, Post-pneumonic	8	0	1	3	4
Bronchitis, Secondary to Sinusitis	8	1	1	3	3
Bronchitis, Secondary to Upper Respiratory Infections	9	0	1	2	6
Bronchitis, Chronic with Pulmonary Emphysema	4	1	1	2	0
Bronchiectasis	5	1	3	1	0
Total	50	7	11	15	17

*No Improvement.

Slight Improvement: Satisfactory trend but not symptom free.

Moderate Improvement: Absence of findings except for occasional irritative cough and rales.

Marked Improvement: Total absence of all subjective and objective findings.

fifteen other cases. The majority of readings were negative or showed only traces and the highest level was recorded as 0.3 mgs. per 100 cc. of blood. Blood for study was usually drawn between the first and second nebulizations on the fifth day of treatment. As excretion occurred at a rate which easily counterbalanced absorption, no cumulative effect was observed.

CASE REPORTS

Several illustrative case reports representative of this diverse group are briefly presented:

Case 1—A white enlisted man in the U. S. Army was admitted to the hospital with a history of a chronic cough for the past several years. Paroxysms were moderate and the sputum was muco-purulent in character but not malodorous. A clinical survey revealed a cylindroid type of bronchiectasis of the left lower lobe. Lipiodol instillation, bronchoscopic

aspiration, vaccine, and other forms of therapy were ineffectual. After two weeks of nebulization the paroxysms of cough were less frequent and less severe, and the sputum was more mucoid and less copious. The effect was by no means curative but there was moderate improvement.

Case 2—A white male adult, soldier, was admitted with a history of recurrent attacks of cough, dyspnea, and wheezes. Sputum cultures and roentgen studies were negative. An allergy work-up indicated multiple sensitivity to pollens of grasses, trees and dust. He was considered a case of non-infectious bronchial asthma and did not respond to sulfa nebulization. This is the type of bronchial asthma which is unaffected by the treatment, in contradistinction to the infectious type. He was then placed on a course of specific desensitization and improvement was marked.

Case 3—A white male adult, civilian employee of the Panama Canal, presented a history of several asthmatic attacks following upper respiratory infections during the past several years. Each episode lasted for a period varying from six to ten weeks. All previous forms of treatment, including ephedrine sprays, hypodermic injections of adrenalin, sedation, iodides, and cold vaccine failed to abort or influence the course of the attacks. He was admitted to the hospital on the third day of this last bout and after seven days of nebulization there was a complete disappearance of all subjective and objective findings. Streptococcus hemolyticus, micrococcus catarrhalis, staphylococcus aureus, and untyped pneumococci were uncovered in several sputum cultures. This case exemplifies the infectious type of bronchial asthma, most liable to respond to nebulization.

Case 4—A white female adult was admitted to the hospital with slight frontal headache, cough, muco-purulent sputum and malaise of seven weeks' duration. On occasion there were night sweats and a feeling of feverishness. A chest survey, including roentgenograms, failed to identify any pulmonary lesion. There was a mixed flora of bacteria in several sputum specimens. She had a mild nasopharyngitis and bilateral maxillary sinusitis, confirmed by x-rays. However, no pus was obtained by antral puncture. There were occasional inconstant low-pitched musical rales and medium inspiratory rales bilaterally. Prior to hospitalization, nose and throat treatment, oral sulfonamides, expectorants and general treatment were prescribed, but the results were poor. On the fifth day of nebulization therapy there was an absence of all symptoms and abnormal physical signs. This is an example of bronchitis secondary to upper respiratory infection, running a subacute to chronic course, with an excellent response.

Case 5—A white male adult, employee of the Panama Canal, was admitted with a bronchopneumonia of the right lower lobe. There was a mixed flora of organisms in the sputum. The parenchymal lesion cleared on a conservative regime within seven days but the patient continued to cough and expectorate muco-purulent sputum. The x-ray at this time showed accentuated pulmonary markings and there were occasional low-pitched musical rales, indicative of a post-pneumonic bronchitis. This condition was resistent to all forms of treatment, including iodides, expectorants, sedation and oral sulfonamides. As the signs did not abate after several weeks, he was transferred to the chest service, where sulfa nebulization was initiated. Within two days he showed moderate improvement and at the end of five days he was completely symptom-free with no clinical evidence of a respiratory infection.

COMMENT

The effect of the direct application of sulfonamides to mucous membranes has been the subject of comment and study. Fletcher[8] reported the caustic action of the drug on mucosal tissue. Hunnicutt,[9] employing a 5 per cent solution of sodium sulfathiazole in an experimental study on the mouse, noted an initial irritation of the nasal mucosa with a subsidence of the reaction and no harmful end result. In this series there were two cases of mild local reaction. There was a rapid dilution of the original solution with a subsequent decrease in alkalinity as a result of the buffering action of the respiratory secretions, so that the chance of an irritating effect was minimized.

The efficiency of this form of therapy is based on the intimate contact of the sulfonamides with the respiratory mucosa harboring pathogenic organisms. The solution of sodium sulfathiazole in contact with body fluids precipitates out as sulfathiazole and its bacteriostatic property produces a salutary effect. Although oral administration of the drug should produce similar results, local concentration by the inhalation method probably accounts for the disparity in therapeutic response as observed in several instances. The advantages of localization of drug treatment for concentration purposes and the avoidance of systemic reactions are noteworthy benefits.

It is interesting to speculate on the various modifications of this method. The selection of the drug need not be confined to sulfathiazole, as other sulfa compounds may be employed, depending upon the susceptibility of the organisms involved. An aqueous solution of sulfathiazole with desoxyephedrine hydrochloride,[10] which has been employed in the form of packs for sinusitis, laryngitis and tracheitis, is worthy of trial in certain constrictive types of bronchitis and bronchial asthma. As far as the vehicle is concerned, there are also other possibilities. Oxygen may be replaced by a mixture of 10 per cent carbon dioxide and 90 per cent oxygen, as suggested by Banyai and Cadden,[11] in cases of thick and tenacious sputum creating difficult expectoration. Barach[12] has recommended the use of an oxygen-helium mixture, which may be substituted for oxygen in cases of status asthmaticus. Sulfa nebulization may also be valuable when it is combined with positive-pressure oxygen[13] for serious respiratory disorders and pulmonary edema, where secondary infection is a factor.

The procedure, as expected, failed completely in bronchial asthma due to non-bacterial inhalants. Cases of chronic bronchitis associated with pulmonary emphysema and bronchiectasis, both irreversible processes, may be favorably influenced but the effects

are not curative. Such lesions as sinusitis with secondary bronchitis, subacute or chronic bronchitis secondary to other upper respiratory infections, post-pneumonic bronchitis and infectious asthmatoid bronchitis often improve remarkably and the results may be curative. Based on an analysis of the various clinical entities, it was generally noted that chronic bronchial lesions of bacterial origin benefited by a course of sulfa nebulization.

SUMMARY

1) A group of 50 patients with diverse infectious bronchial lesions, refractory to other forms of therapy, was treated by the inhalation of nebulized solution (5%) of sodium sulfathiazole.

2) The method of study and of the procedure was described.

3) In 43 cases or 86 per cent of the series there was a definite improvement.

4) Several illustrative case reports were presented.

5) Modifications of the procedure were suggested for further clinical trials.

6) This preliminary survey indicates the promising therapeutic possibility of sulfa nebulization in a resistant type of respiratory infection.

RESUMEN

1) Un grupo de 50 pacientes con diferentes lesiones bronquiales infecciosas, refractarias a otros tratamientos, fueron tratados con la inhalación de nébulas de una solución (5%) de sulfatiazol sódico.

2) Se describe el método de investigación y el procedimiento usado.

3) Hubo mejoria bien definida en 43 casos, o sea en el 86 por ciento de esta serie.

4) Se presenta informes de varios casos ilustrativos.

5) Se sugiere modificaciones del procedimiento que pueden emplearse en ensayos clínicos adicionales.

6) Este examen preliminar indica las prometedoras posibilidades terapéuticas de nébulas de sulfa en un tipo resistente de infección respiratoria.

Acknowledgment is made to Estelle Hall, secretary in the Health Department of the Panama Canal, for her aid in the compilation of data and the preparation of this manuscript. Gratitude is expressed to the nurses of the Chest Service of Gorgas Hospital for their splendid cooperation.

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Funnel Chest: Report of Case Successfully Treated by Chondro-sternal Resection

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Funnel chest (chone-chondrosternon, pectus excavatum) usually is a congenital, but may be an acquired, condition. There is a depression of the lower portion of the sternum with the costal cartilages, which has a tendency to become worse as the individual grows older. Chone-chondrosternon is the name that has been given to the condition by Ochsner and DeBakey,[1] who have made a very extensive review of the literature and reported a case of their own. They very carefully reviewed the records of thirty-two patients who had been operated upon during the past twenty-seven years. Since then, Brown[2] reports on three radically operated cases and reports four cases developing pectus excavatum upon whom a palliative operation was performed. Haberlin[3] has also successfully operated upon one case. The very fact that so few cases have been operated upon does not mean that the condition does not occur more frequently with symptoms severe enough to require operation.

Operation undoubtedly has been denied many patients who could have been benefited surgically. There are three methods of attacking such a condition. The three types of operative procedure are: (1) Chondro-sternal resection. Ten cases had been treated by this procedure with successful results in eight, and death occurred in two. (2) T-Sternotomy, with or without costal-cartilage division, was carried out in fourteen cases. Eight cases were successful, two failed, and death resulted in four. (3) Sternal mobilization with chondral division or resection. This undoubtedly is the operation of choice, because a better thoracic cage will result. Eight cases have been operated upon by this procedure with seven satisfactory results and one failure.

I wish to add a case in which chondro-sternal resection was carried out. Because of the marked deformity of the sternum with rotation, it was felt that resection of the sternum and cartilages was the operation of choice; and a very satisfactory end result was obtained.

Case Report—The patient is a white female, age 21, whose chief complaints were shortness of breath, increasing deformity of the chest and pain and discomfort in the chest. Some deformity had been present as long as she could remember. It had increased in the past two years. She had been working in a defense plant up until the present time. She found

it necessary to stop work because of increasing difficulty with shortness of breath and pain in her chest, and a feeling of pressure on the heart. The pulse rate had been increasing. She had a feeling of a constriction of the chest and she was quite conscious of her heart. These symptoms had become much worse within the last three or four months and in addition to her symptoms she had become quite sensitive about the deformity of the chest and a tendency to stooping of her shoulders. There was also some lack in development of the left breast, it being about half the size of the right breast. Her general physical examination otherwise was negative. There were no abnormal heart sounds. The x-ray of the chest revealed some displacement of the heart toward the right side. The costal arch, on the left, shingled over the sternum so that about one-half of the sternum was under the arch, and there was a marked depression of the sternum with the costal arch on the right side and to the lesser degree on the left side. The blood pressure was 120 over 70, the pulse was 100, and there was a rather marked tendency for the patient to bend forward from the shoulders. The patient had no history of injury, and her general physical condition had always been good. There was no history in the family of abnormality in development as far as she could determine. The urine analysis, blood counts and blood Wassermann tests were all within normal limits.

She was operated upon January 10, 1944. A resection of the xiphoid and body of the sternum, together with the 3rd, 4th, 5th and 6th chondral cartilages on each side was carried out through a curved incision over the sternum. The chondral cartilages on the left were abnormally attached to about the level of the 3rd chondral articulation. They all seemed to run up to this area in a knob formation. They were shingled over each other and the sternum was shingled under these cartilages on the left

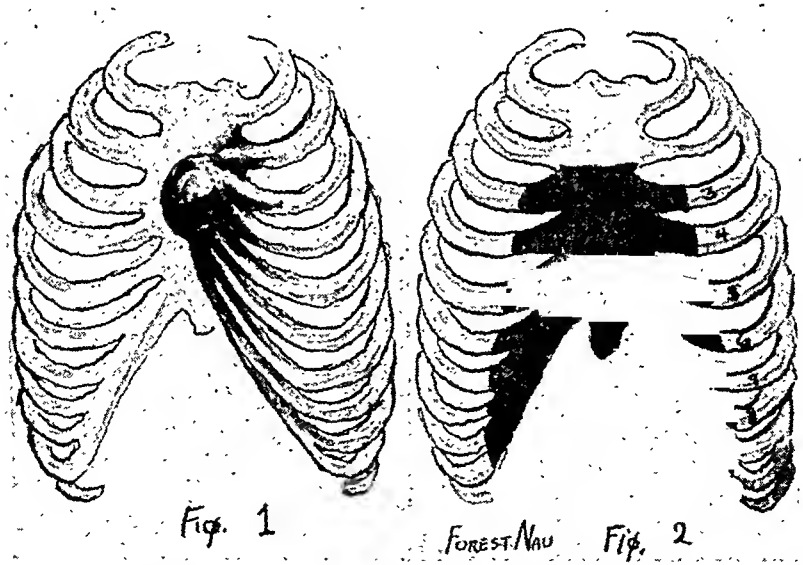
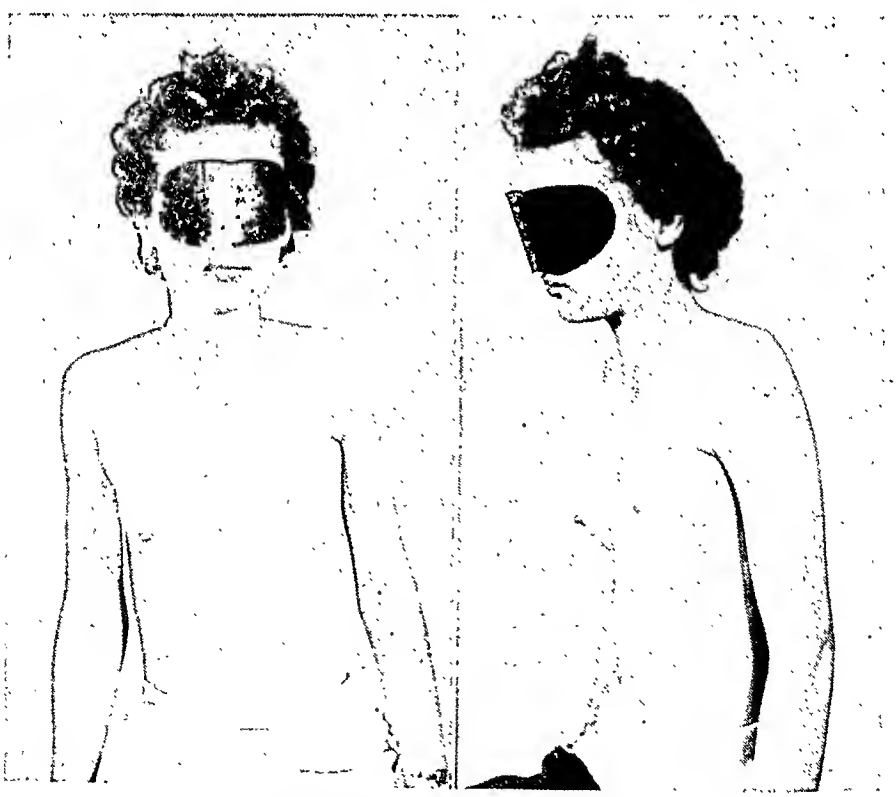


Fig. 1—Artist's drawing of shingling of the ribs over the sternum. *Fig. 2*—Showing the amount of chondrosternal resection that was carried out.

side. The chondral arch was completely resected with the cartilages and the pericardium peeled away from the posterior part of the sternum. The pleura and pericardium were dissected away without entering into either of these cavities. Due to the marked deformity over the body of the sternum I felt it advisable to resect the sternum rather than to fracture it and hold it in place with wire. The bleeding from the body of the sternum was controlled by bone wax. One penrose drain was left over the pericardium and brought out through the lower angle of the incision. Five grams of sulfanilamide was left in the wound. The patient was given 500 cc. of blood at the completion of the operation. The operation was done under intratracheal cyclopropane anesthesia. The whole procedure took about an hour and forty minutes and really worked out very well. The patient's immediate postoperative course was very good. She showed no evidence of any cardiac embarrassment, or abnormality. Her temperature never ran over 100°; on the fifth day she was allowed to sit on the side of the bed, and by the end of the week she was out of bed and walking around in the ward. She was allowed to leave the hospital in ten days and has progressively improved. The heart action has been perfectly normal, with rather active pulsation over the precardial area, but this in no way disturbs the patient. The deformity has been largely corrected. She does not have the feeling of pulling over of her chest, and two months after operation she was allowed to return to her usual duties in a defense plant. Her convalescence really was without incident.



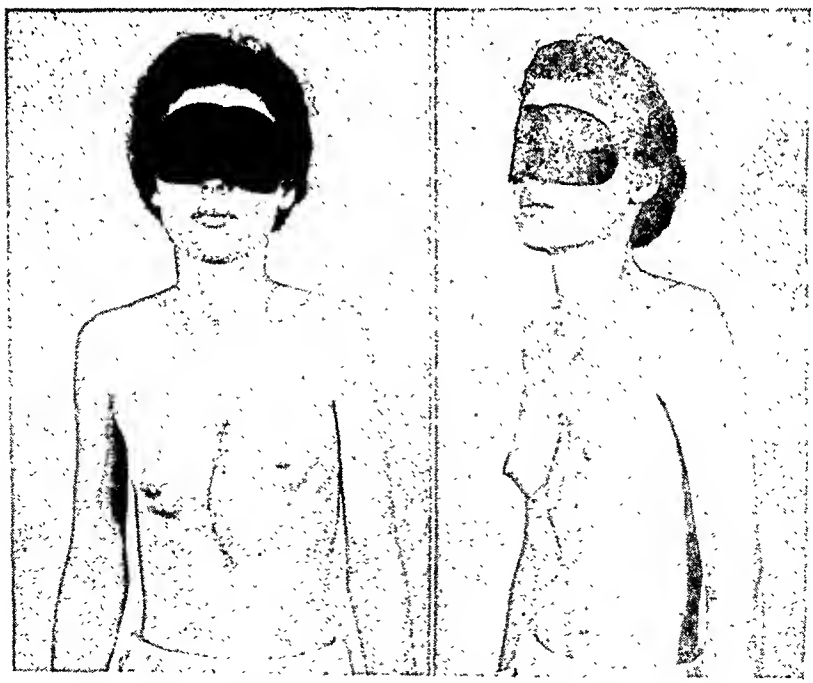
Front and side views preoperatively.

SUMMARY

Another case of successful resection of the sternum with the chondral cartilages on each side for depression of the sternum and costal cartilages has been reported. It is felt that the operation of choice in these cases would be sternal mobilization rather than resection, but in this case, due to the marked deformity of the costal arch, together with the rotation of the sternum, resection was necessary. It is true the entire literature does not contain enough case reports to actively determine which procedure will carry the highest incidence of cure. The mortality rate in resection of the sternum should be no higher than the mortality rate in sternal mobilization. This brings the number of cases that have been operated upon by a radical procedure reported in the literature to thirty-eight. In children a less radical procedure of dividing the diaphragmatic attachment to the sternum will usually stop the progress of the condition.

RESUMEN

Se informa sobre otro caso de resección del esternón y de los cartílagos de ambos lados, ejecutada con buen éxito para corregir la depresión del esternón y de los cartílagos costales. Se opina que



Front and side views two weeks postoperatively.

la operación de elección en estos casos sería la movilización del esternón más bien que la resección; pero en este caso, debido a la gran deformidad del arco costal y a la rotación del esternón, la resección fue necesaria. Es cierto que la entera literatura no contiene suficiente número de informes de casos para determinar adecuadamente cuál procedimiento obtendría el mayor número de curaciones. La mortalidad en la resección del esternón no debe ser más alta que la mortalidad en la movilización del esternón. Este eleva a treinta y ocho el número de casos sometidos a una operación radical, que se han presentado en la literatura. En los niños el procedimiento menos radical de dividir la unión del diafragma con el esternón por lo general interrumpe el progreso de este estado.

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Broncholithiasis

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Although this condition was first fully described by Schenck in 1600, van Ordstrand, Moore & Harris state that only 26 cases of broncholithiasis—as distinct from various types of intra pulmonary calcifications—have been reported in the English literature up to the end of 1941.[1] They would appear, therefore, to be comparatively rare. They may be primarily of endobronchial formation but much more commonly originate outside the bronchus and ultimately erode through the wall. Most frequently they represent the end stage of a primary tuberculous lesion in the tracheobronchial glands,[2] but may result from other types of pulmonary inflammation and suppuration.

In the large majority of reported cases the diagnosis has been based on expectorated stones and in a few on post mortem findings. In later years the bronchoscope has played an increasingly important role both in diagnosis and in treatment. Differentiation can usually be made by this means between a broncholith and the condition with which it is most likely to be confused—a bronchogenic carcinoma. X-rays will, with certainty, demonstrate only the fact of obstruction or partial obstruction of a bronchus.

The physical nature of bronchial concretions varies considerably. They may be hard and firm and, generally, irregular in outline, or of a putty-like consistency; and with the former type considerable care must be used and only gentle and careful manipulations are permissible in attempts to dislodge them through the bronchoscope as pneumothoraces and fatal hemorrhages have followed such maneuvers. It is interesting to speculate why calcium should be deposited in the lung and its lymphatic system so much more frequently than in other portions of the body, and, as has been suggested by Wells,[4] it seems probable that this is due to the greater solubility of calcium salts in weakly acid media than in neutral or alkaline ones. Thus the removal of a large part of the CO_2 from the blood in the lungs would tend to cause some precipitation of lime. Superficially it might seem that an increased consumption of milk and vitamin D would tend to increase the formation of calcium concretions; but, it is to be remembered that the saturation of a solution with a salt such as calcium phosphate depends not on the

total quantities of calcium and phosphorous present but on the product of the concentrations of Ca and PO_4 ions ($Ca^{++} \times PO_4^{---}$) in the solution; and in general it will be found that the deposition of lime in devitalized tissue depends on the fact that CO_2 production is minimal in such tissues.

The symptoms are those chiefly of any bronchial obstruction, the most prominent being cough which is frequently of a wheezing, spasmodic, asthmatic type and often accompanied by pain in the parasternal region of the chest. This pain is apt to be sharp and boring in character during the spasms of coughing and rather dull between them, and in and by itself is suggestive of lithiasis. Varying degrees of hemoptysis from streaking to frank and copious hemorrhages are commonly present. Since both bronchiectasis and lung abscess[3] may be associated phenomena, periodic purulent sputum intervening in a generally mucoid or muco-hemorrhagic expectoration may sometimes be seen. Attacks of dyspnoea may be striking, especially prior to the expectoration of a stone, and relief following its expulsion may be equally marked. Weight loss is not usually great, though loss of sleep through pain and anxiety may lead to some. Most typically there is periodic loss and gain corresponding to the cycles of pain and ease.

The following is a report of a case which came under our care in January, 1942:

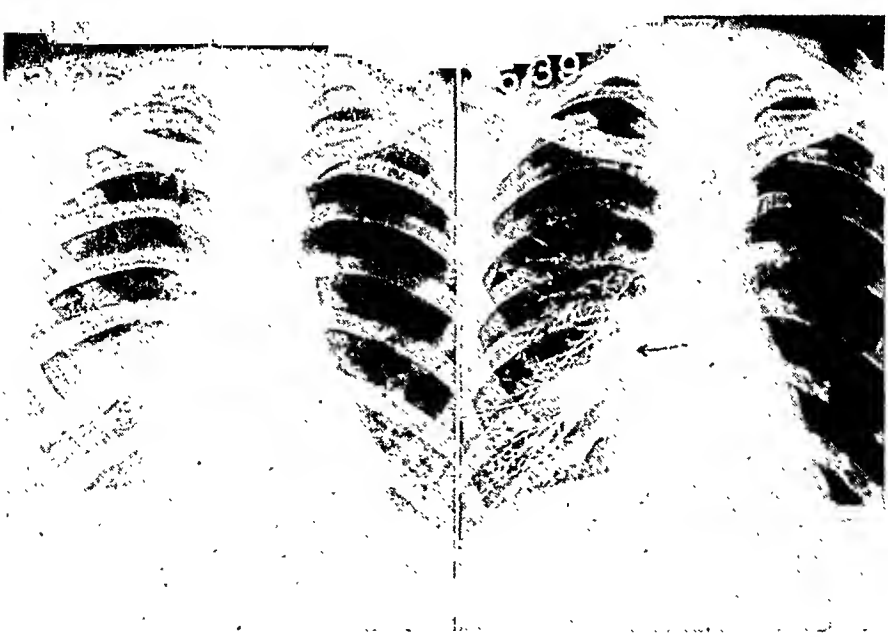

Fig. 1 *Fig. 2*

Fig. 1—Atelectasis of middle lobe. *Fig. 2*—Lipiodol injection showing point of block.

Mrs. E. H., age 33 years, was admitted to the Royal Alexandra Hospital on January 24, 1942. Her complaint was of cough for 12 months, recurrent hemoptysis for 10 months and periodic pain to the right and left of mid sternum. In the previous October she had been in another hospital because of copious hemorrhages which necessitated transfusions. These episodes of bleeding were always immediately preceded by sharp, intense, needle-like pains in the anterior central portion of the chest. A flat film at that time showed atelectasis of the right middle lobe (Fig. 1). A film taken after lipiodol injection, however, failed to demonstrate any bronchial obstruction and a bronchoscopic biopsy was reported as consisting of chronic inflammatory tissue. She had lost some weight during the past summer but had subsequently regained most of it. Her cough was dry and unproductive, but later the sputum was somewhat freer, mucoid and blood-tinged, and on one occasion appeared to consist of pure pus. The temperature at the time of admission was 98.4°, pulse 80 and respirations 20. The highest recorded temperature up to the time of operation was 99.2°. At no time did the sputum show tubercle bacilli or fungi, and no tumor cells were found.

On January 27, bronchoscopy was carried out by Dr. J. G. Young, and the findings were a normal trachea and right bronchial tree. X-ray following lipiodol injection showed an obstruction of the right middle lobe bronchus (Figs. 2, 3 and 4). On February 16, bronchoscopy was repeated and again a normal tree, bronchoscopically, was reported. Actually, as was later demonstrated, the swelling proximal to the obstruction coming at the curve of the bronchus prevented vision beyond it, and gave the appearance of normal mucosa.

Because of the clearly demonstrated bronchial block and the distal atelectasis and the continued bleeding, a bronchogenic carcinoma appeared to be the most likely diagnosis, and operation was decided upon.

On February 26, a preliminary and satisfactory artificial pneumothorax was induced, and on March 2, lobectomy was performed (W. S. A.).

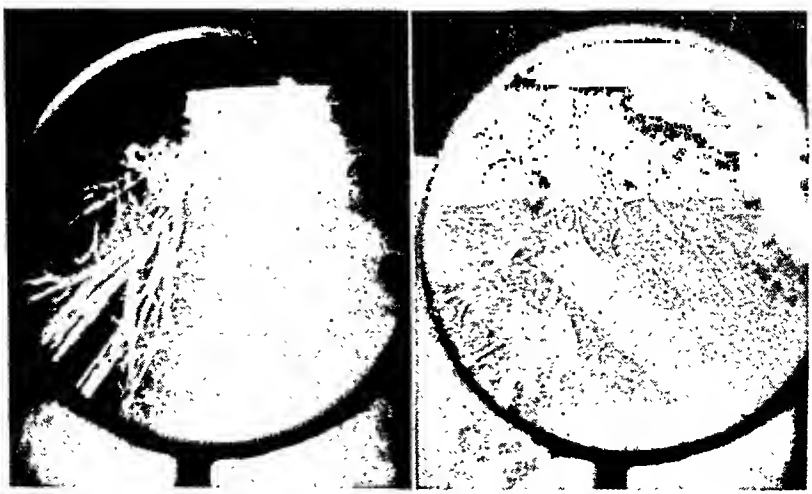

Fig. 3 *Fig. 4*

Fig. 3—Detail of bronchi shown in Fig. 2. *Fig. 4*—Right oblique. Some of the lipiodol has been coughed up.

Under cyclopropane endotracheal anaesthesia with the patient lying on her left side, the right pleural cavity was opened through the sixth interspace and the sixth and seventh ribs fractured posteriorly to increase the exposure. There were only a few adhesions in the region of the diaphragm, otherwise the lung was lying free. The pleura over the middle lobe was covered with fibrin; it had obviously been collapsed for some time and was the seat of an inflammatory process. The upper and lower lobes were uniformly crepitant throughout. No growth could be palpated anywhere and it was decided that the obstruction demonstrated radiologically and producing the atelectatic middle lobe was probably due to a small benign adenoma. Hence, instead of the contemplated radical pneumonectomy, a middle lobe dissection lobectomy was carried out. Each vessel and the main middle lobe bronchus were dissected out and disposed of separately. On dividing the bronchus, a rough hard broncholith about 1 cm. in diameter was seen to be lying in an ulcerated area just distal to the level of section.

Unfortunately, in ligating the structures at the root of the middle lobe and repairing the defect, it was felt that the main bronchus to the lower lobe had been kinked and that partial obstruction might result. For this reason, the lower lobe was also removed. The final stump, with all structures ligated separately, was dusted with sulfathiazole crystals and then covered with the sleeve of pleura that had purposely been left.

The chest cavity was closed in the usual manner and closed drainage instituted through a catheter in the 9th space posterolaterally, leading down to a drainage bottle with a water seal. The trachea and upper bronchi were thoroughly aspirated. The patient received 1100 cc. of citrated blood and plasma during the operation, which was tolerated well.

Postoperatively, there was considerable drainage from the pleural cavity, but the catheter finally plugged and it was necessary after the first week to aspirate the chest occasionally to relieve dyspnoea. During the third week her temperature rose to 104° but after a severe paroxysm

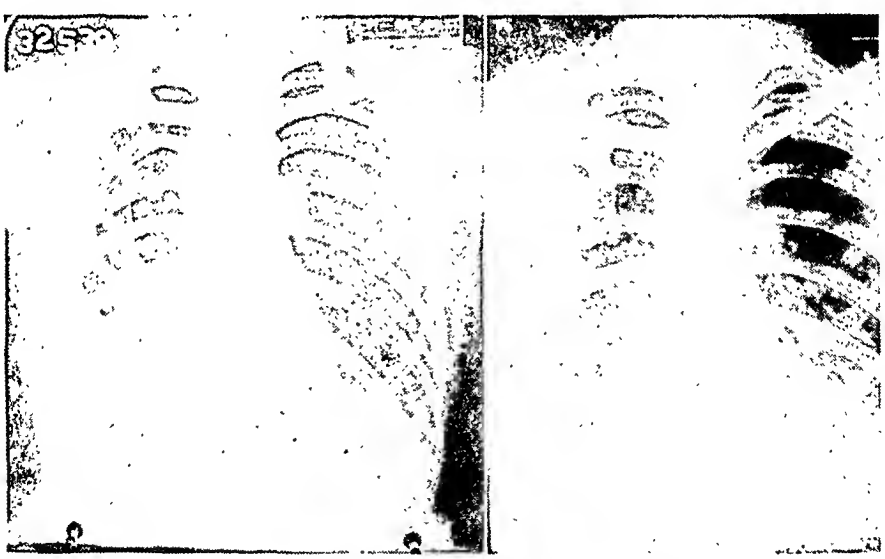

Fig. 5 *Fig. 6*

Fig. 5—April, 1942. Partial expansion of upper lobe. *Fig. 6*—Complete expansion of upper lobe. Bony bridge between cut ribs.

of coughing when she brought up an ounce or so of thick blood-stained pus, her temperature came down to normal, and it was apparent that an abscess in the stump had fortunately ruptured into the bronchial tree and drained.

However, the abscess cavity took a long time to heal, and when it was not emptying freely the temperature would shoot up to 102°. With postural drainage over a 3-week period, her sputum decreased from 8 ounces daily to nil.

She was discharged on the 48th postoperative day (April 18) after being afebrile for a week with a small amount of fluid and considerable air still in the chest cavity (Fig. 5). There was no cough, she felt well and was gaining weight.

On May 6, 1942, she reported that the previous day she had done all the ironing for a family of seven, as well as the cooking and general housework. She had practically no cough except in a cold wind; tended to tire rather easily but felt well and had put on 7 pounds in weight. Lung was still only partially expanded and there was a thickened edge of pleura running from diaphragm to apex.

A re-check on October 27, 1943, shows that she has gained a total of 30 pounds in weight, looks well and feels well. The upper lobe now completely fills the chest cavity, and has a normal appearance (Fig. 6). There is a bridge of calcium joining two ribs where they were cut.

PATHOLOGICAL REPORT

Specimen consists of right lower and middle lobes. The lower lobe throughout is collapsed but seems to be normal. The inferior portion middle lobe is comparatively normal. The small bronchi supplying this area contain clumps of muco-purulent exudate. Three calculi were found in bronchi supplying upper two-thirds of this lobe. The largest concretion, measuring 0.8 cms. in diameter, was lying in a dilated area of the main bronchus surrounded with blood and on the posterior surface of this cavity was a vessel, the wall of which was perforated. This upper two-thirds of the middle lobe on section shows chronic atelectasis with abscesses of bronchi, partial destruction of bronchial walls and peri-bronchial purulent infiltration. The collapsed air cells contain pus cells and there is considerable scarring of lung tissue.

Pathologic Diagnosis—Chronic atelectasis of middle lobe of right lung with chronic abscess formation; chronic suppurative bronchitis with multiple bronchial calculi.

These concretions had originated in a calcified lymphatic gland lying behind the bronchus and had perforated through it, eroding a blood vessel in the process.

SUMMARY

Broncholithiasis is a comparatively rare condition. The calculi may be primarily of endobronchial formation, but much more commonly originate outside the bronchus and ultimately erode through the wall. Most frequently they represent the end stage of

brane of this segment in turn assumes a normal secretory function, and a cyst is formed.

Pierce[5] in a recent article considers most cases to be acquired and only a few to be of true congenital origin. This author further points out that in the acquired type, bronchitis to a minor degree and bronchopneumonia to a major degree are the causative factors in the production of these so-called "cystic" changes in the lung. Pierce further offers the following classification of acquired lesions: (1) Cystic bronchiectasis. (2) Chronic interstitial pneumonitis with emphysema. (3) Chronic bullous emphysema, and (4) Pneumatocele (localized lobular ectasia).

The morbid anatomy is clearly epitomized by Koontz.[3] He recognizes two general types. Those of the first type are bronchial dilatations as shown by persisting muscle fibers and cartilage in the walls. The second group are cavities resembling emphysematous blebs lying subpleurally. There are of course all degrees of gradation and transition types between these two.

The epithelial lining is usually columnar and ciliated. It may be devoid of cilia, cuboidal or flat or the membrana propria may be denuded. Mucous glands are at times present and may form retention cysts.

Most authorities state that a complete lack of pigment in congenital lesions distinguishes them from the acquired variety. The following salient features have been pointed out about cysts. They may be single or multiple, unilocular or multilocular. They may vary in size from minute blebs to enormous cysts that occupy half or more of a thoracic cavity. Either fluid or air or both may be contained in a cystic space. The shape may be spherical or ovoid. The pulmonary alveoli in the vicinity of the cysts may be collapsed or atelectatic or may have failed to develop. This condition may occur in any portion of one or both lungs. Male or female may be affected equally often.

From the reports it would seem that complications and concurrent affections occur less often than one might expect. Cases are recorded in which cysts were associated with hydrothorax, pneumothorax, empyema, bronchopneumonia, lobar pneumonia and, rarely, tuberculosis. In one recorded case it coexisted with sarcoma.

The more common symptoms of cystic disease are dyspnea, cyanosis, cough, cardiac palpitation and rarely hemoptysis.

Wood[8] pointed out that symptoms vary with the extent of lesion, site, and presence or absence of increased intrathoracic pressure. He thinks that the presence of cysts should always be considered in infants who have recurring attacks of dyspnea and cyanosis; and in adults with progressive dyspnea without other known cause.

The main condition to be considered in differential diagnosis is spontaneous pneumothorax. The significant points of differentiation are: (1) There is no history of sudden onset; (2) Subjective symptoms are normal with the exception of shortness of breath in far-advanced cases; (3) No pathological change can be proven as an etiological factor of spontaneous pneumothorax; (4) X-ray and physical findings remain unchanged over long periods of time; (5) The condition is often accidentally discovered; (6) X-ray findings differ from those of spontaneous pneumothorax in the following respects: (a) There is no displacement of the mediastinum or of the mediastinal organs; (b) The compressed lobe cannot be seen; (c) The fine strands traversing the space are in wide sweeping curves and not straight as one would expect to find the small taut adhesions traversing a pneumothorax space.

The roentgenologic features of pulmonary cystic disease and the ease with which they can be diagnosed vary according to the con-

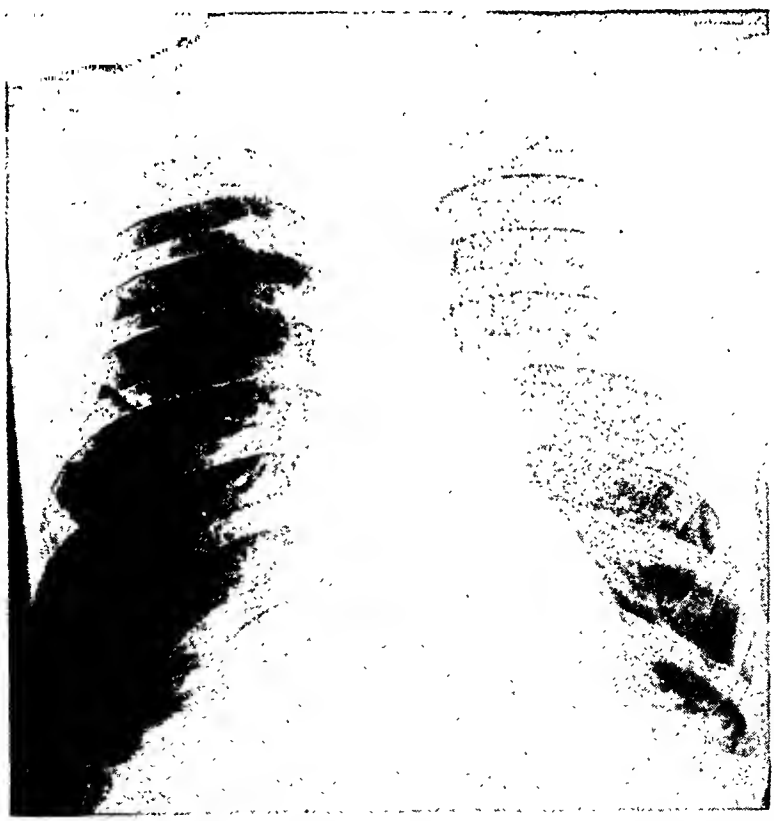

Fig. 1—P. A. x-ray of chest. Note the disease in the right lung as shown by the fine strands traversing the space in wide sweeping curves. Disease in the left upper is also seen as fine strands, shorter than on the opposite side.

tent, size, number and situation of the cysts and the presence or absence of complications or concurrent disease.

Cysts filled with fluid are not easily distinguished from several other pulmonary conditions. This type of cyst without an inflammatory zone around it is usually round or ovoid and casts a uniformly dense and sharply circumscribed shadows. They are most often single, relatively large and resemble benign neoplasm, primary or secondary neoplasm, primary or secondary metastatic new growth, hydatid cyst, dermoid cyst or aneurysm. Even after careful study it may be necessary to make a nonspecific diagnosis of tumor of the lung. An infected fluid-filled cyst surrounded by an irregular zone of reactive inflammation resembles and in most cases will be mistaken for an abscess or pneumonic consolidation.

Cysts containing both air and fluid must be differentiated from abscess, tuberculous cavitation and draining hydatid cyst.

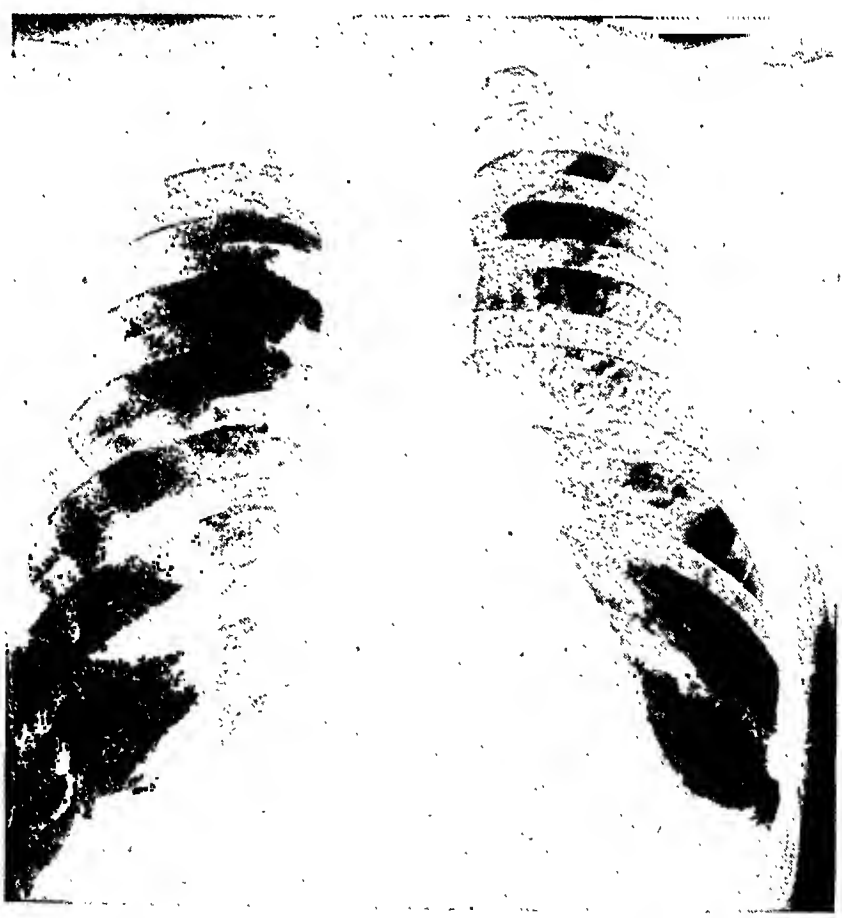

Fig. 2—P. A. x-ray of chest following induction of artificial pneumothorax on the right side. Only a small pocket of air is seen laterally at the base. *(Note:* This film was retouched slightly to bring out the margin of this space.) The wall of the cyst is seen bulging into the pleural air space.

Large air-filled cysts can be distinguished on the x-ray with a high degree of accuracy. They usually are single or not exceeding two or three in number. There is a radioparent area devoid of normal pulmonary markings. The part of the wall of the cyst in contact with the lung appears as a regularly curved line or lines. There are cases in which it is difficult to differentiate. In these cases the following diagnostic procedures may be employed: (1) Wilson's procedure of inducing slight artificial pneumothorax, which demonstrates the lateral lung margin and establishes the fact that one is not dealing with a spontaneous pneumothorax; (2) Thoracentesis may be performed, with needle puncture of the structureless space and injection of 1 to 2 cc. of iodized oil into it; (3) An artificial pneumothorax may be established and 10 to 15 cc. of iodized oil injected into the pleural space. The patient is then manipulated around to allow the oil to spread out and come in contact with all the pleural surfaces. X-rays immediately following this are very distinctive. We used this procedure in our case. From a study of the literature we believe this to be the first time that this procedure has been used for diagnosis of cystic disease. (4) Iodized oil bronchograms may at times be helpful.

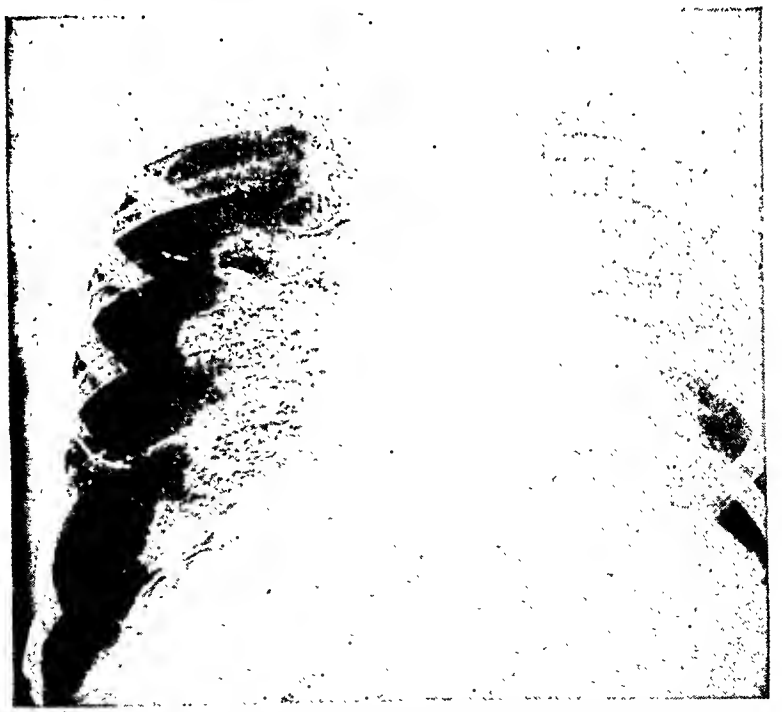

Fig. 3—A. P. x-ray of chest in prone position following injection of iodized oil into the pleural space. The walls of the cyst are now clearly seen and it is evident that there are two separate spaces—cystic and pleural.

Multiple, grouped air-filled cysts are not uncommon. They appear as delicate, complete or incomplete rings, or as a complex network of shadows resembling cobwebs. These must be distinguished from emphysema, diaphragmatic hernia, and bronchiectasis.

Cystic disease of the lung may be complicated by pneumothorax from rupture of a cyst, hydrothorax, empyema, pneumonia, tuberculosis, carcinoma, or any of the other diseases that may attack the lung. These may make the diagnosis very difficult or impossible.

Final diagnosis takes complete cooperation between the clinician and roentgenologist. Correlation of roentgenological and clinical data is essential.

Treatment in general is unsatisfactory. Cole and Nalls[1] say that treatment is dependent on the size, number, location and type of cysts, the presence or absence of infection, and the urgency for relief of symptoms. Wood[8] states that some cases are improved

Fig. 4—X-ray of chest in oblique position following injection of iodized oil into the pleural space, showing findings similar to Fig. 3.

following bronchoscopic aspiration and injection of lipiodol; but he also thinks that treatment should be limited to infected cysts which are amenable to this type of drainage. Wood reports two cases of fluid-containing cysts which were removed surgically. Schenck[7] advocates extirpation of the cysts, saying that at times lobectomy should be resorted to, but adds that the procedure is attended with grave danger. Naturally, if enough lung units are destroyed, there is no surgical or medical procedure which will benefit the patient.

CASE REPORT

G. D., an adult white male, aged 42; occupation, bus driver. Family history not significant. Previous personal history: Patient never was as husky as the other children in his grade at school. Had influenza in 1918. Otherwise comparatively well until present illness.

Present Illness—Patient had recurring attacks of shortness of breath, especially in the morning on arising, during May, 1943. In June he had what was diagnosed as "pneumonia"—symptoms actually were only some increase in shortness of breath together with coughing. X-rays taken in July were read as showing "upper right lung collapsed and lower right full of pneumonia—no tuberculosis." X-rays in August showed "pneumonia clearing some, right upper still collapsed and left upper collapsing some." A chest specialist was then consulted. Sputum studies were made for tubercle bacilli and one sputum was reported positive, Gaffky V count. He was then referred to our out-patient department (9/9/43) and was advised to enter the sanatorium for a period of study. Admission to the sanatorium was on 9/21/43.

Physical examination revealed a well developed, fairly well nourished man whose only complaint was slight soreness in the right chest. Blood pressure was 130/82. Chest examination revealed hyperresonance to percussion and absent breath sounds in the upper half of the chest bilaterally. There were diminished breath sounds in the lower half of both sides. No rales were heard.

Laboratory Findings—All sputum examinations were negative for tubercle bacilli (two concentrated morning sputa, one 24 hour concentrate, three 48 hour concentrates, two 72 hour concentrates, and four cultures).

Roentgen-ray diagnosis was pulmonary cysts, bilateral (Fig. 1).

The impression of the staff was that we were dealing with a case of cystic disease of the lung. To further confirm this we carried out the following procedures:

1) On 9/27/43 a diagnostic artificial pneumothorax, right, was induced. Seven hundred cc. of air was introduced. Opening pressure readings were −7 −2 and the closing readings were −3 −1. X-rays were taken following this procedure (Fig. 2).

2) On the afternoon of 9/27/43 an iodized oil bronchogram on the right side was made.

3) On 10/4/43 600 cc. of air and 10 cc. of iodized oil were injected into the pleural space. The patient was placed in the horizontal position with head lower than the feet and then rolled forward and backward (being observed at the same time under the fluoroscope) to distribute the iodized oil over the surface of the pleura. X-rays were taken immediately (Figs. 3 and 4).

The final diagnosis was "cystic disease of the lung" and the patient was

discharged on 10/9/43 to be followed in the out-patient department. Because of the extensiveness of the cysts and the comparatively good clinical condition of the patient, it was thought that any surgical procedures were definitely contraindicated at this time.

SUMMARY

1) A resumé of the literature on cystic disease of the lung is presented. There is no general agreement as to whether this condition is congenital or acquired. Anatomically, there are two general types of cysts: Those of the first type are bronchial dilatations; the second group are cavities resembling emphysematous blebs lying subpleurally. The more common symptoms of cystic disease are: dyspnea, cyanosis, cough, cardiac palpitation and rarely hemoptysis. The main condition to be considered in differential diagnosis is spontaneous pneumothorax. Treatment in general is unsatisfactory.

2) The authors describe a new diagnostic procedure which may be employed in difficult cases. An artificial pneumothorax is established and 10 to 15 cc. of iodized oil injected into the pleural space. The patient is then manipulated around to allow the oil to spread out and come in contact with all the pleural surfaces. X-rays immediately following this are very distinctive.

3) A case is reported in which the above mentioned diagnostic procedure was used.

RESUMEN

1) Se presenta un resumen de la literatura relativa a la enfermedad quística del pulmón. No existe acuerdo general acerca de si este estado es congénito o adquirido. Hay dos tipos generales de quistes: los del primer tipo son dilataciones bronquiales; los del segundo consisten de cavernas subpleurales que se asemejan a ampollas enfisematosas. Los síntomas más comunes de enfermedad quística son: disnea, cianosis, tos, palpitación cardiaca y, raramente, hemoptisis. La condición más importante que debe considerarse en el diagnóstico diferencial es el neumotórax espontáneo. El tratamiento, en general, no es satisfactorio.

2) Los autores describen un nuevo procedimiento para el diagnóstico que puede emplearse en casos difíciles. Se lleva a cabo un neumotórax artificial y se inyecta de 10 a 15 cc. de aceite yodado en el espacio pleural. Se mueve al paciente de tal manera que el aceite se distribuya y alcance a estar en contacto con todas las superficies pleurales. Radiografías tomadas inmediatamente después de ésto resultan muy claras.

3) Se informa sobre un caso en el que se empleó el procedimiento mencionado para diagnosticar.

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Editor's Note: The original article's bibliography contained 107 references, which space did not permit printing.

The Paradox of Vocational Disability

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Insurance benefits or sick-pay during periods of vocational disability are becoming quite common. In tuberculosis it is not easy to decide at what time a patient should resume some gainful occupation and, later, at what time he is able to resume his regular work. After having made the decision, the physician is faced with the more difficult task of submitting a report, giving the reasons for his conclusions in language that the layman can understand. The physician cannot escape this duty. He should welcome it because these reports bring the opportunity to educate employers, insurance carriers and civic authorities on the role of rehabilitation in tuberculosis. It is only too true that "official agencies have consistently underestimated the significance of rehabilitation."[1] Perhaps this is in part because physicians have not explained its significance in specific individual cases. In order to get all agencies to take a sounder view, we must take advantage of opportunities in individual cases to reiterate the role of rehabilitation in prevention and treatment instead of merely proclaiming general principles and then expect laymen to apply them. Before teaching others, the physician himself must study the relationship of the disease to the patient and to his earning capacity. This is a complicated problem involving personal, social and economic factors but it is essentially a *medical* problem—a problem in functional diagnosis and therapy. The physician must think it through until he can express his reasons convincingly.

Recently, an ex-patient was referred to me because of disagreement between two physicians. One reported: This man has arrested tuberculosis; he is able to resume some work. The second physician agreed that the disease was arrested, but concluded that he was totally disabled from any gainful occupation. The reports of both physicians evidenced a desire to be accurate, but failed to take into account what "able to work" meant to that ex-patient. Their reasoning on the relationship of rehabilitation to disability was muddled. My own conclusion seemed to increase the confusion until my reasons were given consideration and then they were accepted. My conclusions were: "This man is able to do some light work or else to resume his usual work for short hours; however, he is totally disabled at present." This is the paradox of vocational disability. It is hoped that the exposition of the paradox in this

case will clarify the principles of rehabilitation in tuberculosis and will aid the physician in proper certification of disability in tuberculosis.

CASE REPORT

J. H. N., former hospital helper. Referred for decision as to whether he is totally disabled or partially disabled, or able to resume his occupation.

This man had six years of elementary schooling. After leaving school, he did various odd jobs until he was 18, when he was hired as a hospital helper. At the hospital he had been a steady and satisfactory worker for five years when it was discovered that he had active tuberculosis acquired in the course of his occupation. He was then 23 years old. He was admitted to a sanatorium. Complete bed rest was prescribed during the first months of his illness and later, when permitted to get out of bed, he was taught to do things slowly, to use a minimum of physical effort, to abstain from mental exertion and to avoid emotional reactions. As his condition improved, ordinary activity was permitted. Toward the end of his first year he worked in the sanatorium carpenter shop for an hour a day. He enjoyed doing this for the next four months, and then he was discharged from the sanatorium. After that he stayed at home, went out for a daily walk, but did no further work.

I saw him one year ago. X-rays and clinical investigation had shown that for some months his disease had been arrested. Under the mild activities of his daily routine he felt well. He desired to do some useful work, but was uncertain as to whether he was able or should even try to resume his regular duties as a hospital helper. "My kind of work was never easy and I know it is tougher now because of the shortage of help." He had applied for part-time work elsewhere but, he added: "They don't want me when I tell them I've had no job for four years on account of tuberculosis." At that time I told him either to get a part-time job or to undergo some training for a trade.

He began a course in free-hand drawing at a commercial art school. He has been going to this school for two hours a day, and hopes to qualify as an assistant to a comic strip artist, but he is vague as to this prospective occupation. He brought some of his school sketches; they showed some ability in copying, but no special talent.

As required by the Compensation Law for Occupational Diseases, he is receiving $14.25 a week from the hospital in which he had been employed as long as he is totally disabled. All necessary treatment must be provided. Those payments are discontinued when he has recovered his previous earning capacity.

A machine may stand idle for years and, if it has been kept clean and oiled, it can be set going again at a moment's notice. But a man on enforced rest for the same period undergoes profound physical, mental and emotional changes which, even though the disease is arrested, make him incapable of doing any useful work. These changes in a man are reversible; his capacity for physical exertion can be recovered; his psychic and emotional stability can be restored. The normal desire to earn his own living will then assert itself and, with proper encouragement, will become dominant. To

guide him toward this goal requires knowledge of how and when and what to do. This is vocational rehabilitation.

Vocational rehabilitation can be achieved only if it is under direct medical control and is supervised by persons acquainted with the technique of rehabilitation. Rehabilitation is treatment. It is a part of the treatment as necessary for a tuberculosis patient as prescribed rest, diet or pneumothorax. This man should be given vocational rehabilitation as part of the treatment of his disease. His treatment is incomplete until he has been rehabilitated.

Rehabilitation of tuberculosis patients is provided in many institutions and some, such as the Potts Institute and the Altro Work Shop, have this as their main purpose. In these specialized rehabilitation institutions results are excellent, but all patients are not suitable for admission to them. More such institutions are needed but it is no longer necessary or desirable that all patients receive rehabilitation by going there. Their methods have been formulated and published; they can now be applied by others. The staffs at these institutions have accomplished more; they have taught the medical profession that their institutional results can be improved by rehabilitating employees *within industry*. This means specialized rehabilitation institutions are not essential for those ex-patients who had definite occupations which they can resume in graded stages. For these ex-employees the best results are obtained when rehabilitation is done *in the same plant or office, at the same occupation in which they formerly worked*. In business and general industry that is not easy because the supervising personnel never had contact with sick or handicapped workers. The background of the supervisors may not be such that they can be taught rehabilitation principles very easily. In spite of this, the system of rehabilitation by assigning selected tasks within industry with shorter hours and longer rest periods is functioning well. In one field of employment conditions for rehabilitation are ideal—that field is in hospitals. The supervising personnel in a hospital is better informed on medical problems—they have a more sympathetic attitude toward their handicapped employees and they can quickly learn the methods of rehabilitation. In a hospital, medical supervision is more readily available. The variety of jobs in a hospital requires all grades of skill, intelligence and exertion. All this makes the task of rehabilitation, when undertaken by hospitals, less difficult than in any other industry.

In the case of J. H. N., cited above, his former employer is a large hospital with many jobs to be done. The hospital is now short of trained personnel. Here is a man with five years' experience in a job. Hospitals are now forced to train men in a few weeks for those jobs and put up with their lack of skill. Rehabilitation of an experi-

enced man is part of the national war effort. At present this man cannot tackle a full-time job. But with medical supervision of his assignments, he could now do much useful work and later could be guided back to full service. If he is not started on a light assignment, he can do no work at all. He will be useless to himself and to everyone else. He will continue to be an expense to the former employer, who must continue to pay his compensation. He and his family must continue to live on his meager compensation payments instead of on his normal earnings. We know that ex-patients who have been rehabilitated are less likely to have a recurrence than those who drift along in idleness. No new employer is likely to give him a supervised light job, except as a matter of philanthropy. As a matter of enlightened self-interest, the former employer who must pay his compensation should provide such a job.

CONCLUSION

This man, now 28 years old, has a partial disability, and is able to work short hours under medical control. He should be asisgned 3 hours' work every morning, six days a week for 3 months, after which his assignments probably can be steadily increased. This should be begun now, and until it is begun he is totally disabled.

SUMMARY

It is part of medical diagnosis when physicians decide a patient has recovered sufficiently to do light work or to do his regular work on part-time. Disability certification at this stage of tuberculosis is well formulated in the paradox "From a vocational viewpoint, totally disabled at the present time but capable of doing selected work." Such certification gives the physician the opportunity to explain the role of rehabilitation to employers, insurance carriers and civic authorities who require disability certificates in order to administer sick-pay and insurance benefits. Employers and administrators have not been sufficiently informed on this important factor for recovery. Physicians must use each case to reiterate that rehabilitation is part of treatment. If a job is made available in which the work, hours and the patient are under medical control, then the patient is able to do useful work and will probably progress rapidly toward completely restored working capacity. If such a job is not provided, he cannot do any work, continues totally disabled and progresses toward completely restored working capacity at a snail's pace. The author cites the case of a hospital worker to illustrate these principles.

Rehabilitation through medically controlled wage-earning work is most successful when done by the employer for whom the patient worked prior to his illness. The employers who have the best

facilities and opportunities for rehabilitating their former employees are our hospitals. Special institutions for rehabilitation are valuable especially because they have taught us that the major part of rehabilitation must be accomplished within industry.

RESUMEN

Es parte del diagnóstico el que los médicos decidan si un paciente se ha restablecido lo suficiente para hacer un trabajo liviano o para reasumir parcialmente su ocupación ordinaria. La certificación de incapacidad en este período de la tuberculosis está bien formulada en la paradoja: "Desde el punto de vista vocacional totalmente incapacitado al presente, pero capacitado para hacer un trabajo seleccionado." Tal certificación ofrece al médico la oportunidad de explicar el papel que desempeña la rehabilitación a los patrones, agentes de Seguros y autoridades cívicas que requieran certificados de incapacidad para poder pagar los salarios de enfermos o los beneficios del Seguro. Los patrones y los administradores no han sido suficientemente informados sobre este factor importante para el restablecimiento. Los médicos deben aprovechar cada caso para insistir que la rehabilitación es parte del tratamiento. Si se presenta un empleo en el que la clase de trabajo, las horas de labor y el paciente quedan bajo dirección médica, entonces el paciente está capacitado para prestar un servicio útil, y probablemente progresará con rapidez hacia la completa restauración de su capacidad de trabajo. Si no se proporciona tal empleo, el paciente no puede trabajar en lo absoluto, continúa totalmente incapacitado y avanza a paso de tortuga hacia la completa restauración de su capacidad para trabajar. Cita el autor el caso de un empleado de hospital para ilustrar estos principios.

La rehabilitación mediante el trabajo remunerado bajo superintendencia médica obtiene mayor éxito cuando la lleva a cabo el patrón para quien trabajaba el paciente antes de su enfermedad. Los patrones que tienen mejores facilidades y oportunidades para rehabilitar a sus ex-empleados son nuestros hospitales. Las instituciones especiales de rehabilitación son valiosas especialmente porque ellas nos han enseñado que la mayor parte de la rehabilitación debe llevarse a cabo dentro de la industria.

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EDITORIAL

THE TUBERCULOSIS PROBLEM IN PUERTO RICO

In Puerto Rico, tuberculosis stands unrivalled as Public Enemy Number One. It causes nearly one-half of all deaths of persons between nineteen and thirty-five years of age. Because it is responsible for widespread disability and loss of life among young parents and breadwinners, it constitutes an economic as well as a public health problem.

After twenty years of steadily increasing tuberculosis mortality, the rate in 1933 reached 337, one of the highest in the civilized world; and it seemed that the disease was becoming epidemic. The alarmed Public Health authorities launched an intensive campaign against it, and in 1934 tripled the number of beds for open cases, bringing the total to 1,500. This number was still extremely inadequate, since our average of more than 5,000 tuberculosis deaths annually called for more than 10,000 beds, according to the standards of the National Tuberculosis Association.

The urgent need was then, and is now, isolation of open cases. In the homes isolation is impossible. Puerto Rico is an agricultural country, densely populated and poverty stricken. Most of the inhabitants live in slums where huts are crowded together, families are crowded within the huts, sanitary facilities are meager in the extreme, and everything favors the spread of contagious diseases. Without hospital beds it is foolish to preach isolation, when, in the home, five or six persons, including the patient, must of necessity live in one small room.

In the hope of controlling spread of tuberculosis from the open cases who could not be isolated, the next step undertaken was the application of artificial pneumothorax to ambulant patients. Simultaneously, the early diagnosis campaign was greatly intensified, especially through the examination of contacts of open cases. The first pneumothorax dispensaries were opened in 1935. By the end of the fourth year nearly 2,000 patients were receiving pneumothorax while living at home. Also, 147,000 persons had been examined for tuberculosis in Health Department Clinics.

For the first time since reliable statistics were available, the mortality curve started on a sustained downward course, and in six years after the beginning of the campaign, the mortality rate dropped twenty per cent.

It is disheartening to report, however, that after such an effort our tuberculosis death rate in Puerto Rico is still 245 (in 1941), five and one-half times the rate in continental United States. Pneumothorax can control a certain number of open cases, but the majority remain a public health menace unless hospitalized.

Were we to provide the required number of beds, the cost for the first five years would run into some fifty millions of dollars—an impossible undertaking, considering our limited means and other pressing needs of the island. Our only hope is to obtain Federal aid. The Puerto Rico Chapter of the American College of Chest Physicians has made an appeal for such help to Senator Dennis Chavez, president of a Congressional Committee recently sent to the island to investigate social and economic conditions. We hope that this plea will be effective.

Even in the midst of a desperate struggle for the survival of democracy, we cannot help but think that the tuberculosis problem of Puerto Rico could be solved with less cost than building one battleship. Perhaps it is a sinful thought at this moment, since the objectives of the war are so much more desirable than life; but it is a good thought to keep in mind until after the war, when human needs will have a new perspective and human values will rise to higher levels.

—J. Rodriguez Pastor, M.D., F.C.C.P.

Report of the Council on Pan American Affairs

The Council on Pan American Affairs of the College is very happy to report that the Argentine Chapter was founded April 29, this being the fifth Latin American chapter to be founded. The officers of the chapter are: President, Dr. Gumersindo Sayago; vice-president, Dr. Raul Vaccarezza; secretary-treasurer, Dr. Juan Carlos Rey.

The next chapter will unquestionably be the Peruvian because our governor for Peru, Dr. Ovidio Garcia-Rosell, came to Chicago bringing with him sixteen applications for membership which are sufficient for the formation of a chapter.

Reviewing the organization of Latin American chapters, the first was founded in Cuba in December, 1940, the second in Brazil in November, 1942, the third in Puerto Rico in January, 1943, the fourth in Mexico in September, 1943, and now the fifth in Buenos Aires in April, 1944. Thus the College now has chapters in four Latin American countries, and a chapter in Puerto Rico; and a chapter will very shortly be formed in Peru. Governors are at work on the organization of chapters in Chile, Colombia, Ecuador, Panama and Venezuela. Contacts are being established with chest physicians of the remaining countries, and invitations to join the College extended to outstanding specialists.

It is most gratifying that we have had such good attendance by Latin American colleagues at the present meeting, despite the difficulties of transportation. The president of the Cuban Chapter, Dr. Teodosio Valledor, had definitely planned to come to the meeting to represent the Cuban Chapter but was unable to complete his arrangements for transportation. The Brazilian Chapter had expected to send a delegate but was likewise unable to secure the necessary priority at the last minute. The Puerto Rico Chapter sent an official delegate, Dr. Velasquez. The Mexican Chapter has been exceptionally well represented by its president, Dr. Donato Alarcon; its vice-president, Dr. Cosio Villegas; its secretary, Dr. Octavio Bandala, and several other members. Chile is represented by Dr. Enrique Garcia Suarez and Dr. Julio Urrutia, who bring letters from our governor for Chile, Dr. Orrego Puelma.

The Council on Pan American Affairs held a successful meeting last night at which not only a number of our Latin American colleagues but both the incoming and outgoing presidents of the College, the secretary and the executive secretary, the editor-in-chief of *Diseases of the Chest*, the chairman of the Membership Committee, General Marietta, and one of our vice-presidents, Dr. Overholt, were present. Furthermore, Dr. William E. Ogden of Toronto, governor of the College for Canada, was also in attendance and reported that Canadian membership of the College has grown in the past year or so from 8 to between 30 and 40.

One other important matter remains to be mentioned in the Report of the Council on Pan American Affairs, and that is the survey of opportunities in the various sanatoria and hospitals for chest diseases in the United States for residents and postgraduate students from the Latin American countries. This survey was conducted in a very efficient manner by Mr. Kornfeld. A total of 152 institutions returned questionnaires and 92 stated that they would be willing to accept one or more physicians

from the other American republics for postgraduate medical education in tuberculosis. The following information has been compiled from the 92 informative questionnaires: Sixty-nine (69) institutions indicated that they had facilities for housing these physicians. All of the sanatoria indicated that they had facilities for teaching diagnosis and treatment of diseases of the chest, and in many instances, they have indicated the various services which are available at the institutions or in connection with some medical school. In 74 institutions, an out-patient clinic is affiliated with the sanatorium or this service is made available in a nearby city. Physicians would be eligible to receive a stipend from 35 of the institutions in varying amounts ranging up to $200.00 per month. In 30 of the institutions suitable housing facilities can be found for physicians who desire to live outside of the sanatorium. The cost for rental and maintenance varies greatly according to the location of the institutions. In 18 of the institutions the Spanish language is spoken; 1 institution reports that Portuguese is spoken, and in 26 institutions the French language is spoken. In 75 of the institutions it was reported that the physicians would be able to obtain training in case-finding and other public health activities pertaining to tuberculosis and diseases of the chest. The minimum number of beds in the 92 institutions with which this report is concerned is 70, and the maximum number of beds is 1219. The number of physicians on the staff as well as the number of nurses is reported on each of the questionnaires. In some cases individual letters have accompanied the questionnaires, and copies of these letters are included in this report.

Several men have already been placed with the aid of the information obtained in this survey, and we stand ready to help the Pan American Sanitary Bureau, the Office of the Coordinator of Inter-American Affairs and the State Department, as well as private individuals in the placement of postgraduate students and physicians interested in diseases of the chest.

Chevalier L. Jackson, M.D., F.C.C.P.,
Chairman,
Philadelphia, Pennsylvania

Report of the Board of Examiners

The first examination for Fellowship in the College was conducted at Atlantic City, New Jersey, in June, 1942. Twenty-five candidates for Fellowship took the oral examination; 24 passed, 1 failed.

The first written examination was conducted by the Board of Examiners of the College at various cities throughout the United States in January, 1943. Twenty candidates took this written examination of which 16 passed, 4 failed.

The next written examination was given in Cincinnati, Ohio, and at other cities throughout the United States in November, 1943. Ten candidates took this written examination for Fellowship, all of whom successfully passed.

In June, 1944, 32 candidates took the written examination at Chicago and at other cities throughout the United States. The results of this last examination have not as yet been tabulated.

	Candidates	*Passed*	*Failed*
June, 1942	25	24	1
January, 1943	20	16	4
November, 1943	10	10	0
June, 1944	32*	.	..
	87	50	5

*Results of the June, 1944, examinations have not as yet been tabulated.

George G. Ornstein, M.D., F.C.C.P.,
Chairman,
New York, New York

COLLEGE NEWS

PRELIMINARY SCIENTIFIC PROGRAM SPONSORED BY THE COLORADO MEMBERS, AMERICAN COLLEGE OF CHEST PHYSICIANS

Cosmopolitan Hotel—Denver, Colorado
Wednesday, Sept. 27, 1944

9:00 a. m.—Scientific Session.

"Pulmonary Complications of Thrombophlebitis," Douglas Deeds, M.D., Denver, Colorado. Discussant: Major Robert Woodruff, M.C., U.S.A., Denver, Colorado.

"Chemotherapy in Experimental Tuberculosis (A Review)," H. Corwin Hinshaw, M.D., and William H. Feldman, D.V.M., Mayo Clinic, Rochester, Minnesota. Discussant: Arthur Rest, M.D., F.C.C.P., Spivak, Colorado.

"Cystic Disease of the Lungs," Major Robert Liggett, M.C., U.S.A., Denver, Colorado.

"Pulmonary Resection in the Treatment of Tuberculosis," Capt. Charles V. Demong, M.C., U.S.A., Denver, Colorado.

12:00 Noon—Luncheon.

"The Role of the Chest Specialist in the Control of Tuberculosis," Louis Mark, M.D., F.A.C.P., F.C.C.P., Columbus, Ohio.

2:00 p. m.—Scientific Session.

"The Synergistic Relationship Between Mycotic and Tuberculous Infections of the Lung," Alvis E. Greer, M.D., F.A.C.P., F.C.C.P., Houston, Texas.

"Minimal Tuberculosis," Capt. W. H. Roper, M.C., U.S.A., Denver, Colo.

"Lung Resection for Chronic Pulmonary Infection," Richard Davison, M.D., F.A.C.S., F.C.C.P., Chicago, Illinois.

"Diasone in the Treatment of Pulmonary Tuberculosis," Charles Kaufman, M.D., F.C.C.P., Denver, Colorado.

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SCIENTIFIC PROGRAM SPONSORED BY WISCONSIN MEMBERS AMERICAN COLLEGE OF CHEST PHYSICIANS

Schroeder Hotel—Milwaukee, Wisconsin
Sunday, Sept. 17, 1944

2:00 p. m.—Scientific Session, Pere Marquette Room.

John K. Shumate, M.D., F.C.C.P., Madison, Wisconsin, presiding.

"Pregnancy in Tuberculosis," Fred M. F. Meixner, M.D., F.A.C.S., F.C.C.P., Peoria, Illinois. Discussants: Arthur S. Webb, M.D., F.C.C.P., Glen Ellyn, Illinois; R. W. Roethke, M.D., Milwaukee, Wisconsin.

"Tuberculosis Control in General Hospitals," Minas Joannides, M.D., F.A.C.S., F.C.C.P., Chicago Illinois. Discussion to be opened by Otto C. Schlack, M.D., F.C.C.P., Oak Forest, Illinois.

"Tuberculosis of the Nasopharynx," A. R. Hollender, M.D., F.A.C.S., Chicago, Illinois. Discussants: William E. Grove, M.D., Milwaukee, Wisconsin; Edwin R. Levine, M.D., F.C.C.P., Chicago, Illinois.

"Surgical Management of Empyema," Richard Davison, M.D., F.A.C.S., F.C.C.P., Chicago, Illinois. Discussants: Otto L. Bettag, M.D., F.C.C.P., Pontiac, Illinois; John D. Steele, Jr., M.D., Milwaukee, Wisconsin; Karl Schlaepfer, M.D., Milwaukee, Wisconsin.

6:00 p. m.—Dinner Meeting, Parlor A.

Carl O. Schaefer, M.D., F.A.C.S., F.C.C.P., Racine, Wisconsin, presiding.

"The Medical Profession and the Control of Tuberculosis," Jay Arthur Myers, M.D., F.A.C.P., F.C.C.P., Minneapolis, Minnesota, President, American College of Chest Physicians.

Organization of Wisconsin Chapter, American College of Chest Physicians.

8:00 p. m.—X-Ray Conference, Pere Marquette Room.

H. H. Christensen, M.D., F.A.C.S., F.C.C.P., Wausau, Wisconsin, presiding.

X-ray films of interest will be shown at this conference.

General Arrangements Committee

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Bert L. Jones, M.D., F.C.C.P., Wood

PENNSYLVANIA CHAPTER

The Annual Meeting of the Pennsylvania Chapter of the American College of Chest Physicians will be held Tuesday evening, September 19, 1944, at Pittsburgh, Pennsylvania. This meeting is being held in conjunction with the annual meeting of the Pennsylvania Medical Association which meets at Pittsburgh, September 19-21.

Plans have been made for a short business meeting, and an x-ray conference to be followed by the annual dinner of the chapter. For further particulars concerning this meeting, please communicate with Dr. Edward Lebovitz, F.C.C.P., Secretary-Treasurer, Pennsylvania Chapter, American College of Chest Physicians, 617 Jenkins Building, Pittsburgh, Pennsylvania.

MICHIGAN CHAPTER

The Michigan Chapter of the American College of Chest Physicians will hold its annual meeting at the Pantlind Hotel, Grand Rapids, Michigan, on September 28, 1944, in conjunction with the annual meeting of the Michigan State Medical Society, which meets at Grand Rapids, September 27-29.

The following program has been arranged:

"Symposium on Virus Pneumonia." Norman E. Clarke, M.D., F.C.C.P., and Oliver Marcotte, M.D., F.C.C.P., Detroit.

"The Physician's Role in Tuberculosis." Jay Arthur Myers, M.D., F.C.C.P., Minneapolis, Minnesota, President, American College of Chest Physicians.

For further particulars concerning this meeting, please communicate with Dr. William P. Chester, F.C.C.P., Secretary-Treasurer, Michigan Chapter, American College of Chest Physicians, 2916 Seminole Avenue, Detroit, Michigan.

INDIANA CHAPTER

The Indiana Chapter, American College of Chest Physicians, will hold a luncheon meeting at the Murat Temple, Indianapolis, on Tuesday, Oct. 3, 1944, in connection with the annual meeting of the Indiana State Medical Association.

Dr. Paul H. Holinger, F.C.C.P., Secretary-Treasurer of the College, will be the guest speaker and will present a paper on "Bronchoscopic Diagnosis of Bronchial Tumors." This will be followed by a technicolor movie on "Lesions of the Bronchial Tract," which is being sponsored by the Anti-Tuberculosis Committee of the Indiana State Medical Association.

An X-Ray Conference and election of officers will follow.

For further particulars concerning this meeting, please communicate with Dr. Hubert B. Pirkle, F.C.C.P., Secretary-Treasurer, Indiana Chapter, Superintendent, Indiana State Sanatorium, Rockville, Indiana

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PROGRAM SOUTHERN CHAPTER AMERICAN COLLEGE OF CHEST PHYSICIANS

November 13-14, 1944

Meeting Conjointly With the Southern Medical Association
November 13-16, 1944

The annual meeting of the Southern Chapter, American College of Chest Physicians, meeting conjointly with the Southern Medical Association, will be held at St. Louis, Missouri, November 13-14.

Program

Monday, November 13

9:30 A. M. ..... DeSoto Hotel

Registration.

10:00 A. M. ..... DeSoto Hotel

Semi-Annual Meeting, Board of Regents, J. C. Placak, M.D., F.C.C.P., Cleveland, Ohio, Chairman, Board of Regents, presiding.

12:30 P. M. ..... DeSoto Hotel

Luncheon, Board of Regents and Board of Governors (Fellows and guests invited), Jay Arthur Myers, M.D., F.C.C.P., Minneapolis, Minnesota, President, American College of Chest Physicians, presiding.

2:00 P. M. ..... St. Louis Municipal Auditorium

Scientific Session, Paul H. Ringer, M.D., F.C.C.P., Asheville, North Carolina, President, Southern Chapter, presiding.

"The Unexpandable Lung," Sydney Jacobs, M.D., F.C.C.P., New Orleans, Louisiana. Discussion to be opened by Carl C. Aven, M.D., F.C.C.P., Atlanta, Georgia.

"Primary Carcinoma of the Lung—Ten-Year Follow-Up," William F. Rienhoff, Jr., M.D., Baltimore, Maryland. Discussion to be opened by Evarts Graham, M.D., F.C.C.P., St. Louis, Missouri.

"Rehabilitation of Cases of Lung Resection," Lt. Col. Brian B. Blades, M.C., Washington, D. C. Discussants: *Alton Ochsner, M.D., F.C.C.P., New Orleans, Louisiana, and Maurice G. Buckles, M.D., F.C.C.P., Louisville, Kentucky.

"What Shall We Do With Silent and Masquerading Chest Lesions?", Richard H. Overholt, M.D., F.C.C.P., Brookline, Massachusetts. Discussion to be opened by Duane Carr, M.D., F.C.C.P., Memphis, Tennessee.

6:30 P. M. ..... DeSoto Hotel

Cocktail Party sponsored by the Missouri Chapter, American College of Chest Physicians.

7:15 P. M. ..... DeSoto Hotel

President's Dinner (informal), *Walter Vest, M.D., F.C.C.P., Huntington, West Virginia, Toastmaster. Introduction of Jay Arthur Myers, M.D., F.C.C.P., Minneapolis, Minnesota, President, American College of Chest Physicians, and Charles M. Hendricks, M.D., F.C.C.P., El Paso, Texas, President-Elect, American College of Chest Physicians.

Guest Speaker: Herman E. Hilleboe, M.D., F.C.C.P., Washington, D. C., Medical Director, United States Public Health Service.

President's Address: Paul H. Ringer, M.D., F.C.C.P., Asheville, North Carolina, President, Southern Chapter, American College of Chest Physicians.

Tuesday, November 14

9:00 A. M. ..... St. Louis Municipal Auditorium

Scientific Session, Herbert L. Mantz, M.D., F.C.C.P., Kansas City, Missouri, presiding.

"Atypical Pneumonia Resembling Pulmonary Tuberculosis," Major Walter L. Nalls, M.C., F.C.C.P., Washington, D. C. Discussion to be opened by Dean B. Cole, M.D., F.C.C.P., Richmond, Virginia.

"Hedblom's Syndrome: Acute Primary Diaphragmitis," Minas Joannides, M.D., F.C.C.P., Chicago, Illinois.

"Tuberculous Empyema," George G. Ornstein, M.D., F.C.C.P., New York, New York. Discussants: H. I. Spector, M.D., F.C.C.P., St. Louis, Missouri, and Karl Schaffle, M.D., F.C.C.P., Asheville, North Carolina.

"Pneumoconiosis, Especially as Found in the Metal and Granite Trades," O. A. Sander, M.D., Milwaukee, Wisconsin.

12:30 P. M. ..... DeSoto Hotel

Luncheon to be followed by Business Meeting, Paul A. Ringer, M.D.,

F.C.C.P., Asheville, North Carolina, President, Southern Chapter, American College of Chest Physicians, presiding.

2:00 P. M. ..... DeSoto Hotel

X-Ray Conference, H. Frank Carman, M.D., F.C.C.P., Dallas, Texas, presiding.

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*Invited, acceptance not received at time of publication.

Officers and Committees, Southern Chapter

President, Paul H. Ringer, M.D., F.C.C.P., Asheville, North Carolina
First Vice-President, Alvis E. Greer, M.D., F.C.C.P., Houston, Texas
Second Vice-President, Carl C. Aven, M.D., F.C.C.P., Atlanta, Georgia
Secretary-Treasurer, Benjamin L. Brock, M.D., F.C.C.P., Waverly Hills, Kentucky

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David M. Skilling, Jr., M.D., St. Louis

Several of the hotels are already booked to capacity and others are filling up rapidly. For reservations, address Hotel Committee, Southern Medical Association, 901 Syndicate Trust Building, St. Louis 1, Missouri.

For further particulars concerning this meeting, please communicate with Benjamin L. Brock, M.D., F.C.C.P., Secretary-Treasurer, Southern Chapter, Waverly Hills Sanatorium, Waverly Hills, Kentucky, or H. I. Spector, M.D., F.C.C.P., Chairman, Arrangements Committee, 622 University Club Building, St. Louis 3, Missouri.

NEW JERSEY CHAPTER

The officials of the New Jersey Chapter, American College of Chest Physicians, met at the Essex House, Newark, New Jersey, on June 28, 1944, and at the Shonghum Mountain Sanatorium, Morris Plains, New Jersey, on July 26, 1944. Plans for the Fall Meeting of the chapter were discussed, and it was decided to hold the meeting at the Valley View Sanatorium, Paterson, New Jersey, on November 16, 1944, at 8:30 p. m. The members of the Passaic County Medical Society will be the guests of the chapter. An interesting program on diseases of the chest is being arranged.

For further particulars concerning this meeting, please communicate with Dr. Harold S. Hatch, F.C.C.P., Secretary-Treasurer, New Jersey Chapter, Shonghum Mountain Sanatorium, Morristown, New Jersey.

CALIFORNIA CHAPTER

Dr. Seymour M. Farber, F.C.C.P., San Francisco, has been appointed secretary-treasurer of the California Chapter, American College of Chest Physicians, succeeding Dr. J. J. Singer, F.C.C.P., who resigned because of ill health. Dr. Stephen A. Parowski, F.C.C.P., San Diego, is President of the chapter, and Dr. Charles L. Ianne, F.C.C.P., Stanford University, is Vice-President.

PRESIDENT-ELECT OF CUBA RECEIVES COLLEGE OFFICIALS

A delegation of the Cuban Chapter of the American College of Chest Physicians was received by the President-Elect of Cuba, Dr. Ramon Grau San Martin. This delegation was comprised of Dr. Octavio Rivero, President, Dr. Rene Garcia Mendoza, Vice-President, Dr. Orfilio Suarez de Bustamante, Secretary-Treasurer, and Dr. Antonio Navarrete, Regent. Introductions were made by Dr. Rivero, a close friend of Dr. Grau, President-Elect of the Republic of Cuba.

A congratulatory message from Dr. Jay Arthur Myers, President of the American College of Chest Physicians, was delivered to Dr. Grau on behalf of the members of the College. Dr. Grau expressed his thanks and extends to the members of the College his appreciation, goodwill, and sympathy for the College and its work.

CUBAN CHAPTER ELECTS OFFICERS

The Cuban Chapter of the College held its annual election of officers on July 6 and the following physicians were elected to office:

President, Dr. Octavio Rivero, F.C.C.P., Havana
Vice-President, Dr. Rene Garcia Mendoza, Havana
Secretary-Treasurer, Dr. Orfilio Suarez de Bustamante, Havana

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COLLEGE NEWS NOTES

Dr. Teodosio Valledor, Havana, and Dr. Rene Garcia Mendoza, Havana, have been appointed Medical Director and Assistant Medical Director, respectively, of the new Children's Tuberculosis Sanatorium recently completed in Havana. Both of these physicians won their appointments through competitive exercises.

Dr. Chevalier L. Jackson, F.C.C.P., Chairman of the Council on Pan American Affairs, has been appointed official delegate of the American Academy of Ophthalmology and Otolaryngology to be held at Montevideo, Uruguay, in October.

Reprints have been received from Dr. Jose Silveira, Bahia, Brazil, and added to the College library.

Dr. Shu-Fan Li, F.C.C.P., Governor of the College for China, spoke at Plummer Hall, Mayo Clinic, Rochester, Minnesota, on June 19. Dr. Li discussed "The Medical Problems of South China." Dr. Li was in Hong Kong at the time of the Japanese invasion of Hong Kong and is at present visiting in this country. Dr. Li was the first Minister of Health of China and he is Director and Chief Surgeon of the Hong Kong Hospital.

Dr. George G. Ornstein, F.C.C.P., was guest speaker at the First National Congress of Tuberculosis and Silicosis held at Mexico City, July 23-29, 1944. Dr. Ornstein presented a paper on "Pathological Aspects of Tuberculosis."

Dr. J. Winthrop Peabody, F.C.C.P., Regent of the American College of Chest Physicians, will present a paper on "Post-war Planning for Tuberculosis Control in General Hospitals" before the annual meeting of the American Hospital Association, October 1, 1944, at Cleveland, Ohio. Dr. Joseph C. Placak, F.C.C.P., Chairman of the Board of Regents of the College, will discuss this paper.

The following members of the American College of Chest Physicians have been elected as Section Officers of the American Medical Association for 1944-45: Alton Ochsner, M.D., F.C.C.P., New Orleans, Louisiana, Secretary, Section on General Surgery. Louis H. Clerf, M.D., F.C.C.P., Philadelphia, Pennsylvania, Henry B. Orton, M.D., Newark, New Jersey, and Fletcher D. Woodward, M.D., Charlottesville, Virginia, have been elected Chairman, Vice-Chairman and Secretary, respectively, of the Section on Laryngology, Otology and Rhinology.

The following members of the College in Texas will hold an office or serve as a member of a committee of the Texas State Medical Society for the ensuing year: *Chairman, Board of Trustees:* Sam E. Thompson, M.D., F.C.C.P., Kerrville, President, Texas Chapter, American College of Chest Physicians; *Member, Board of Trustees:* J. B. McKnight, M.D., F.C.C.P., Sanatorium, Governor of the College for the State of Texas; *Chairman, Committee on Postgraduate Medical Education:* Felix P. Miller, M.D., F.C.C.P., El Paso; *Chairman, Tuberculosis Committee:* R. G. McCorkle, M.D., F.C.C.P., San Antonio; *Member, Tuberculosis Committee:* R. B. Homan, Jr., M.D., F.C.C.P., El Paso; *Chairman, Section on Public Health:* Victor E. Schulze, M.D., San Angelo; *Member, Committee on Library Endowment:* Orville E. Egbert, M.D., F.C.C.P., El Paso; *Members, Committee on Public Relations:* Felix P. Miller, M.D., F.C.C.P., El Paso, and Victor E. Schulze, M.D., San Angelo.

Dr. John C. Sharp, F.C.C.P., Salinas, California, Governor of the American College of Chest Physicians for the State of California, was elected Vice-President of the Association of Western Hospitals at their annual meeting held at San Francisco, July 5.

Dr. Evarts R. Graham, F.C.C.P., St. Louis, Missouri, was appointed a member of the Committee to Study and Survey American Hospitals and their Post-war Expansion Needs. The study and survey will be financed by a grant of $35,000 each by the Commonwealth Fund of New York, the National Foundation for Infantile Paralysis, and the W. K. Kellogg Foundation. The American Hospital Association will make an additional contribution of $15,000 if it becomes necessary. It is hoped that the study will determine the adequacy of distribution of present hospital facilities and the best method for insuring hospital care and such facilities to all citizens.

Dr. Walter E. Vest, F.C.C.P., Huntington, West Virginia, was elected Vice-President of the American Geriatrics Society at their annual meeting held at New York City, June 8-10. Dr. Vest is a member of the Council on Military Affairs and Public Health of the American College of Chest Physicians.

Dr. Martin H. Collier, F.C.C.P., Grenloch, New Jersey, was elected President of the State Board of Health of New Jersey. Dr. Collier is Chairman of the Committee on General Management and Rehabilitation of Diseases of the Chest of the American College of Chest Physicians and he served as the first President of the New Jersey Chapter of the College, 1940-41.

Dr. Charles P. Bailey, F.C.C.P., Jenkintown, Pennsylvania, will present a paper before the General Assembly of the Pennsylvania State Medical Society at their annual meeting to be held at Hotel William Penn, Pittsburgh, Wednesday morning, September 20, at 9:30 a. m. Dr. Bailey's subject will be "Lobectomy and Pneumonectomy in Modern Medicine."

Dr. Nelson Mercer, F.C.C.P., has been appointed Chief Medical Officer, Tuberculosis Division, Gallinger Municipal Hospital, Washington, D. C. He succeeds Charles P. Cake, M.D., F.C.C.P., who resigned this position to accept a position with the U. S. Public Health Service. Dr. Cake is stationed at the Marine Hospital, Staten Island, New York.

Dr. Fred M. F. Meixner, F.C.C.P., Peoria, Illinois, President of the Illinois Chapter, American College of Chest Physicians, has been appointed Chairman of the Committee on Tuberculosis of the Illinois State Medical Society.

Dr. David B. Gregg has been appointed clinic coordinator and assistant physician at Pinehaven Sanatorium, Charleston, South Carolina. Dr. Gregg was formerly resident at the State Tuberculosis Sanatorium, State Park, South Carolina.

Dr. David McCullough, F.C.C.P., has been appointed superintendent of the Kerrville State Sanatorium, Kerrville, Texas.

Dr. John Srail, F.C.C.P., has been appointed superintendent and medical director of the Oakhurst Sanatorium, Elma, Washington.

Dr. Alexander S. Mack has been appointed superintendent of the William Roche Memorial Hospital, Toledo, Ohio. Dr. Paul M. Holmes, F.C.C.P., is President of the Board of Trustees.

Dr. Frank B. Stafford, F.C.C.P., has been appointed superintendent of the Blue Ridge Sanatorium, Charlottesville, Virginia. Dr. Stafford had served as assistant superintendent of the sanatorium since its opening in 1920.

Dr. Charles K. Petter, F.C.C.P., has been elected President of the Lake County Tuberculosis Society, Lake County, Illinois.

A symposium on cancer of the lung was presented by Dr. Chevalier L. Jackson, F.C.C.P., and Dr. W. Emory Burnett before the Dauphin County Medical Society at the Harrisburg Academy of Medicine, Harrisburg, Pennsylvania, on May 16.

Lt. Comdr. Thomas E. Newell, F.C.C.P., Dayton, recently spent a fifteen-day leave at home after almost two years in the South Pacific with the First Marine Division.

Dr. H. B. Morgan, F.C.C.P., Ware Shoals, South Carolina, was the guest speaker at the meeting of the Abbeville County Medical Society on June 15. Dr. Morgan spoke on "Non-Tuberculous Diseases of the Chest."

Dr. John B. Floyd, F.C.C.P., Louisville, Kentucky, resigned his position as Director of Tuberculosis Control of the Kentucky State Department of Health.

The memory of the late Dr. R. B. Homan, Sr., El Paso, Texas, was honored on July 11 by the dedication of the Homan Solarium at the El Paso City-County Hospital. The solarium was built with funds supplied by friends of Dr. Homan when, at the time of his death, his family requested that money ordinarily spent for flowers be donated instead to the Tuberculosis Society for the perpetuation of Dr. Homan's work.

Major Frank P. Coleman has been appointed chief of surgical service at the McGuire General Hospital, Richmond, Virginia.

The American College of Surgeons has cancelled its annual Clinical Congress which was scheduled to have been held at Chicago, October 24-27, 1944.

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No. 2	Nelson W. Strohm, M.D., Buffalo, New York	1946
No. 3	C. Howard Marcy, M.D., Pittsburgh, Pennsylvania	1945
No. 4	Karl Schaffle, M.D., Asheville, North Carolina	1947
No. 5	Louis Mark, M.D., Columbus, Ohio	1946
No. 6	James H. Stygall, M.D., Indianapolis, Indiana	1945
No. 7	H. I. Spector, M.D., St. Louis, Missouri	1947
No. 8	Paul A. Turner, M.D., Louisville, Kentucky	1945
No. 9	Andrew L. Banyai, M.D., Wauwatosa, Wisconsin	1946
No. 10	George B. Gilbert, M.D., Colorado Springs, Colorado	1945
No. 11	Charles J. Koerth, M.D., Junction, Texas	1947
No. 12	Charles S. Kibler, M.D., Tucson, Arizona	1947
No. 13	Harry C. Warren, M.D., San Francisco, California	1947
No. 14	Frederick Slyfield, M.D., Seattle, Washington	1946
No. 15	Antonio Navarrete, M.D., Havana, Cuba	1946
No. 16	Gumersindo Sayago, M.D., Cordoba, Argentina	1946
No. 17	Donato G. Alarcon, M.D., Mexico City, Mexico	1946
No. 18	Affonso MacDowell, M.D., Rio de Janeiro, Brazil	1947
No. 19	J. Rodriguez Pastor, M.D., Santurce, Puerto Rico	1947
No. 20	William E. Ogden, Toronto, Ontario, Canada	1947
	Murray Kornfeld, Chicago, Illinois, Executive Secretary	

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Arizona	Howell Randolph, M.D.	Phoenix	1947
Arkansas	Jesse Dean Riley, M.D.	State Sanatorium	1947
California	John C. Sharp, M.D.	Salinas	1945
Colorado	Arnold Minnig, M.D.	Denver	1947
Connecticut	Lyman R. Morse, M.D.	Hartford	1945
Delaware	Lawrence D. Phillips, M.D.	Marshalltown	1946
District of Columbia	Wm. D. Tewksbury, M.D.	Washington	1947
Florida	M. Jay Flipse, M.D.	Miami	1947
Georgia	James A. Redfearn, M.D.	Albany	1945
Idaho	Orval F. Swindell, M.D.	Boise	1947
Illinois	Robert K. Campbell, M.D.	Springfield	1945
Indiana	Jerome V. Pace, M.D.	New Albany	1946
Iowa	J. Carl Painter, M.D.	Dubuque	1946
Kansas	Arthur L. Ashmore, M.D.	Wichita	1947

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State	*Governor*	*City*	*Term Expires*
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Louisiana	Louis A. Monte, M.D.	New Orleans	1945
Maine	Francis J. Welch, M.D.	Portland	1947
Maryland	Victor F. Cullen, M.D.	State Sanatorium	1947
Massachusetts	Hubert A. Boyle, M.D.	Middleton	1945
Michigan	*William A. Hudson, M.D.	Detroit	1947
Minnesota	G. Arvid Hedberg, M.D.	Nopeming	1945
Mississippi	John S. Harter, M.D.	Sanatorium	1945
Missouri	Herbert L. Mantz, M.D.	Kansas City	1945
Montana	Frank I. Terrill, M.D.	Deer Lodge	1946
Nebraska	John F. Allen, M.D.	Omaha	1946
New Hampshire	Robert B. Kerr, M.D.	Manchester	1946
New Jersey	Marcus W. Newcomb, M.D.	Browns Mills	1945
New Mexico	William H. Thearle, M.D.	Albuquerque	1946
New York	George Foster Herben, M.D.	Yonkers	1945
North Carolina	Merle D. Bonner, M.D.	Jamestown	1947
Ohio	John H. Skavlem, M.D.	Cincinnati	1947
Oklahoma	Robert M. Shepard, M.D.	Tulsa	1946
Oregon	James M. Odell, M.D.	The Dalles	1946
Pennsylvania	Victor M. Leffingwell, M.D.	Sharon	1946
Rhode Island	U. E. Zambarano, M.D.	Wallum Lake	1946
South Carolina	Richard K. Brown, M.D.	Greenville	1946
Tennessee	Raymond R. Crowe, M.D.	Nashville	1945
Texas	J. B. McKnight, M.D.	Sanatorium	1947
Utah	Wm. C. Walker, M.D.	Salt Lake City	1945
Vermont	Louis Benson, M.D.	Pittsford	1945
Virginia	Dean B. Cole, M.D.	Richmond	1947
Washington	John E. Nelson, M.D.	Seattle	1947
West Virginia	George R. Maxwell, M.D.	Morgantown	1947
Wisconsin	Carl O. Schaefer, M.D.	Racine	1946
Wyoming	H. R. Kanable, M.D.	Basin	1945
*Chairman, Board of Governors			
Alaska	A. H. Johnson, M.D.	Kodiak	1945
Hawaii	William F. Leslie, M.D.	Honolulu	1945
Philippine Islands	Miguel Canizares, M.D.	Manila	1946
Puerto Rico	Jacob Smith, M.D.	Rio Piedras	1946
U. S. Army	Maj. Gen. S. U. Marietta	Washington, D. C.	1947
U. S. Navy	Capt. Robert E. Duncan	Washington, D. C.	1947
U. S. Public Health Service	Herman E. Hilleboe, M.D.	Washington, D. C.	1946
U. S. Veterans Administration	Col. Roy A. Wolford, M.C.	Washington, D. C.	1946
Canada			
Quebec	J. A. Couillard, M.D.	Mont Joli	1947
Eastern Provinces	A. F. Miller, M.D.	Kentville, N. S.	1947
Western Provinces	George Ferguson, M.D.	Melville, Sask.	1946
Ontario	Harold I. Kinsey, M.D.	Toronto	1946
Argentina	Raul F. Vaccarezza, M.D.	Buenos Aires	1947
Australia	John H. Blackburn, M.D.	Queensland	1945
Chile	Hector Orrego Puelma, M.D.	Santiago	1947
China	Shu-Fan Li, M.D.	Hong Kong	1947
Colombia	Carlos Arboleda Diaz, M.D.	Bogota	1946
Cuba	Octavio Rivero, M.D.	Havana	1945
Ecuador	Juan Tanca Marengo, M.D.	Guayaquil	1946
India	Jaharlal Ghosh, M.D.	Calcutta	1946
Mexico	I. Cosio Villegas, M.D.	Mexico City	1945
Norway	Carl Semb, M.D.	Oslo	1945
Panama	Amadeo V. Mastellari, M.D.	Panama City	1946
Peru	Ovidio Garcia Rosell, M.D.	Lima	1947
South Africa	David Pieter Marais, M.D.	Cape Town	1945
Uruguay	Fernando Domingo Gomez, M.D.	Montevideo	1947
Venezuela	Jose Ignacio Baldo, M.D.	Caracas	1946

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Richard Davison, M.D.	Chicago, Illinois	1947
Capt. Robert E. Duncan, U.S.N.	Washington, D. C.	1945
Herman E. Hilleboe, M.D.	Washington, D. C.	1947
Maj. Gen. S. U. Marietta, U.S.A.	Washington, D. C.	1945
Joseph W. Post, M.D.	Philadelphia, Pa.	1946
Samuel E. Thompson, M.D.	Kerrville, Texas	1947
Walter E. Vest, M.D.	Huntington, W. Va.	1946
Col. Roy A. Wolford, M.C.	Washington, D. C.	1945

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Sydney Jacobs, M.D.	New Orleans, La.	1947
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(Annual Meeting, New York City, June, 1945)

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Benjamin L. Brock, M.D.	Waverly Hills, Kentucky
Irving Willner, M.D.	Newark, New Jersey

Note: The following committees have not as yet been completed, and the names of the members of these committees will be published in the next issue of the journal:

Committee to Establish a Board for Diseases of the Chest

Committee on the Management and Treatment of Diseases of the Chest

- Subcommittee on Chemotherapy and Allied Measures
- Subcommittee on General Management and Rehabilitation of Diseases of the Chest
- Subcommittee on Non-Surgical Collapse Therapy
- Subcommittee on Surgical Treatment of Diseases of the Chest

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Juan Carlos Rey, M.D., Buenos Aires, *Secretary-Treasurer*

OBITUARIES

CHARLES HARTWELL COCKE

1881-1944

Dr. Charles Hartwell Cocke, formerly vice-president of our parent organization, the Federation of American Sanatoria, died suddenly at Asheville, North Carolina, on August 3, of coronary disease. He was born December 1, 1881, at Columbus, Mississippi, the son of Charles Hartwell Cocke, president of Mississippi College for Women, and Rowena Lockhart Hudson Cocke. He was the first graduate of the Episcopal High School of Virginia at Alexandria and received his A.B. in 1902 from the University of Virginia. His medical degree was conferred by Cornell in 1905 and he served an interneship at the Presbyterian Hospital in New York, 1906-1907. He then took postgraduate work at the University of Vienna and in London and Paris. Dr. Cocke practiced in Birmingham, Alabama, until he became ill with tuberculosis, when he went to Saranac Lake. Upon his recovery in 1911, he located in Asheville and in 1914 married Miss Amy Grace Plank of Carlisle, Pennsylvania.

He was secretary of the Buncombe County Medical Society in 1917 and 1918; president in 1923 and became an honorary member in 1943. Upon the death of Dr. Charles L. Minor, Dr. Cocke was made governor for North Carolina of the American College of Physicians (1929-1942), chairman of the Board of Governors from 1936-42 and was elected first vice-president in 1942, with reelection in 1944. He was vice-president of the American Clinical and Climatological Society in 1931 and vice-president of the Southern Medical Association in 1932, serving as secretary of its Section on Medicine in 1937. He was certified as a diplomate by the American Board of Internal Medicine in 1936. He was also a member of the Southern Interurban Clinical Club; a member of the American Association of the History of Medicine; American Trudeau Society and National Tuberculosis Association. He was medical director of Zephyr Hill Sanatorium; consultant to Biltmore Hospital, Patton Memorial Hospital, Hendersonville, N. C., Learline Reeves Sanatorium, Greenville, Tenn., and attending physician to Mission and Saint Joseph's Hospitals, Asheville. He was chairman of the local draft board.

Dr. Cocke was the author of numerous papers on tuberculosis and internal medicine, contributing to International Clinics, American Journal of Medical Sciences, Annals of Internal Medicine; American Review of Tuberculosis; Southern Medical Journal; New York Medical Journal; Virginia Medical Journal; New Orleans Journal of Medicine and Surgery; New England Medical Journal; West Virginia Medical Journal and Southern Medicine and Surgery.

"Hartwell" or "Charlie" Cocke endeared himself to a host of friends, patients and colleagues by his accessibility, ready sympathy and genial humor. He combined the courtesy and charm of the traditional Southern gentleman with the alert poise and quick insight of a native New Yorker. He could be depended upon to serve in any worthy cause. As a consultant, his observations were comprehensive and his judgment sound, while his attitude was always fair but frank to all concerned. His writings and addresses had the clarity and force of an experienced teacher. As a presiding officer, he proceeded with efficiency and dispatch. Literature,

travel and golf were his chief means of relaxation in a life which required careful organization to be lived as he lived it.

Karl Schaffle, M.D., F.C.C.P.,
Regent, District No. 4

SAMUEL IGLAUER

1871-1944

After a brief illness, Dr. Samuel Iglauer died at Cincinnati, Ohio, on June 23, 1944. Dr. Iglauer was born in Cincinnati on December 28, 1871. He received his B. S. from the University of Cincinnati in 1895 and his M.D. from the Medical College of Ohio in 1898. Following his graduation from medical school, he spent several years in intensive study in European clinics. He then returned to Cincinnati and practiced otolaryngology until the time of his death.

Dr. Iglauer was a member of the faculty of the University of Cincinnati, as Professor of Laryngology from 1916 until 1930, and as Professor of Otolaryngology from 1930 until his death. He was director of the Otolaryngological Service at the Jewish Hospital, General Hospital and Children's Hospital.

Dr. Iglauer was author of over one hundred papers and did some pioneer work in America in the use of the bronchoscope. He, with Dr. Sidney Lang, was among the first to describe the x-ray appearance of the mastoid bone. He published some of the first articles in this country on the use of lipiodol for studying the diseases of the lungs. He was an authority on the anatomy of the spaces of the neck and gave lectures and published numerous papers on this subject. A recent paper, in conjunction with Dr. William Molt of Indianapolis, described the injury to the larynx resulting from an indwelling duodenal tube.

Dr. Iglauer was a member of the American Laryngological, Rhinological and Otological Society, the American Academy of Ophthalmology and Otolaryngology, the American Broncho-Esophagological Association and a member of the American College of Chest Physicians.

John H. Skavlem, M.D., F.C.C.P.,
Governor for Ohio

FERDINAND CHENIK

1891-1944

After an illness of several months, Dr. Ferdinand Chenik of Detroit, Michigan, died on August 15, 1944, at his ranch near Westlaco, Texas. Dr. Chenik was a native of Austria, and took pre-medical work at the University of Leipzig, Germany. He came to Detroit in 1914, and was graduated from the University of Michigan and Detroit College of Medicine. He owned and was the superintendent of the Chenik Hospital in Detroit.

Dr. Chenik was a Fellow of the American College of Chest Physicians, a member of the American Medical Association, Michigan Medical Association, and the Wayne County Medical Society. He was the author of two books and many articles on tuberculosis.

Dr. Chenik is survived by his wife, Josephine, and three children, Viola, Loretta, and Richard.

THE PHYSICIAN'S IMPORTANCE IN WAR AND PEACE

To memorialize the medical profession's "skill and courage and devotion beyond the call of duty" is the purpose of the new prize-contest recently announced by the American Physicians Art Association.

The contest is open to all physicians, both civilian and military, who are members of the A.P.A.A. The prizes are sufficiently important to attract some very fine art in all of the principal media, including oil, water color, sculpture, and photography.

For full details, write to the association's secretary, Dr. F. H. Redewill, Flood Building, San Francisco, California. Also pass this information on to your physician-artist friends, both civilian and military.

DETROIT REPORTS NEARLY 50 PER CENT DEATHS DUE TO TUBERCULOSIS

Of 44 deaths reported by Dr. Bruce H. Douglas, Commissioner of Health for the City of Detroit, for the week ending August 19, 1944; 32 of these deaths were attributed to tuberculosis (21), lobar pneumonia (5) and broncho pneumonia (6). The other 12 deaths were reported for whooping cough (3), syphilis (4) and poliomyelitis (5). No deaths were reported for 8 other communicable and infectious diseases. There were 79 cases of tuberculosis reported for this week against a norm of 52. Thus, for the week ending August 19, 1944, 73 per cent of the deaths reported for infectious and communicable diseases in the City of Detroit were caused by respiratory disease, with tuberculosis accounting for nearly 50 per cent of the total deaths reported.

NATIONAL DRUG APPOINTS MARTIN RESEARCH HEAD

Philadelphia, Pa.—Mr. A. B. Collins, President of The National Drug Company, announced today that Dr. Gustav J. Martin had been appointed to the position of Research Director of the company. Dr. Martin comes to The National Drug Company from the Warner Institute in New York City where he was Assistant Director in charge of the Division of Chemistry. He is a member of numerous scientific societies and has published more than 50 papers in various scientific journals. The appointment of Dr. Martin is another step toward the fulfillment of the broad research program which National Drug is now undertaking.

POSITION WANTED

Brazilian physician with wide experience in chest surgery desires a position at a sanatorium under the supervision of a competent chest surgeon in order to obtain further training in this country. For further particulars, address Box 208-A, American College of Chest Physicians, 500 North Dearborn Street, Chicago 10, Illinois.

POSITIONS AVAILABLE

Position available for physician who has some experience in tuberculosis work, as the medical resident of a small tuberculosis sanatorium in Ohio. Would consider a physician who is physically able to work two or three hours a day. For further particulars write to Box 117A, American College of Chest Physicians, 500 North Dearborn Street, Chicago 10, Illinois.

Position available as Resident Physician, 250-bed tuberculosis sanatorium in Indiana. Maintenance for physician and family and use of 5-room brick cottage. Salary $175.00 to $205.00 per month. For further particulars, address Box 119A, American College of Chest Physicians, 500 North Dearborn Street, Chicago 10, Illinois.

Resident physician in Tuberculosis and Chest Diseases in California Hospital, physically exempt from the armed forces. Position affords training in the necessary chest surgery for a sanatorium of 105 patients as well as chest diseases from the general hospital. Institution has a bed capacity of 456. Salary is $225 per month. For further particulars, address Box 120-A, American College of Chest Physicians, 500 North Dearborn Street, Chicago 10, Illinois.

Position available in a modern sanatorium situated in Oregon. Experience in chest diseases required. Salary $250 per month and complete maintenance. State license not necessary for duration of war and six months thereafter. For further particulars address Box 118-A, American College of Chest Physicians, 500 North Dearborn Street, Chicago 10, Illinois.

LIFE MEMBERSHIP

The Board of Regents of the American College of Chest Physicians adopted at the last annual meeting of the College held at Chicago, June 10-12, 1944, the following schedule of fees for life membership in the College:

"The minimum fee for life membership of members having attained the age of 59 years or over—$100.00.

58 years	$110.00	52 years	$170.00	45 years	$240.00
57 years	120.00	51 years	180.00	44 years	250.00
56 years	130.00	50 years	190.00	43 years	260.00
55 years	140.00	49 years	200.00	42 years	270.00
54 years	150.00	48 years	210.00	41 years	280.00
53 years	160.00	47 years	220.00	40 years	290.00
		46 years	230.00		

The above figures have been estimated on a 69 year life expectancy."

AMERICAN COLLEGE OF CHEST PHYSICIANS
500 North Dearborn Street
Chicago 10, Illinois

I hereby subscribe to Life Membership in the American College of Chest Physicians. According to the present plan, at my age the total Life Membership Fee is ($.....).....Dollars

My annual dues shall cease at once. I shall be entitled to the publications of the College, including the Directory and the journal, *Diseases of the Chest*, without further cost, for the balance of my life, and my membership shall be permanently active.

The principal of my subscription shall be added to the permanent Endowment Fund of the College.

Name.....

Address.....

City..... Zone No..... State.....

Date of Birth..... Date of Subscription.....